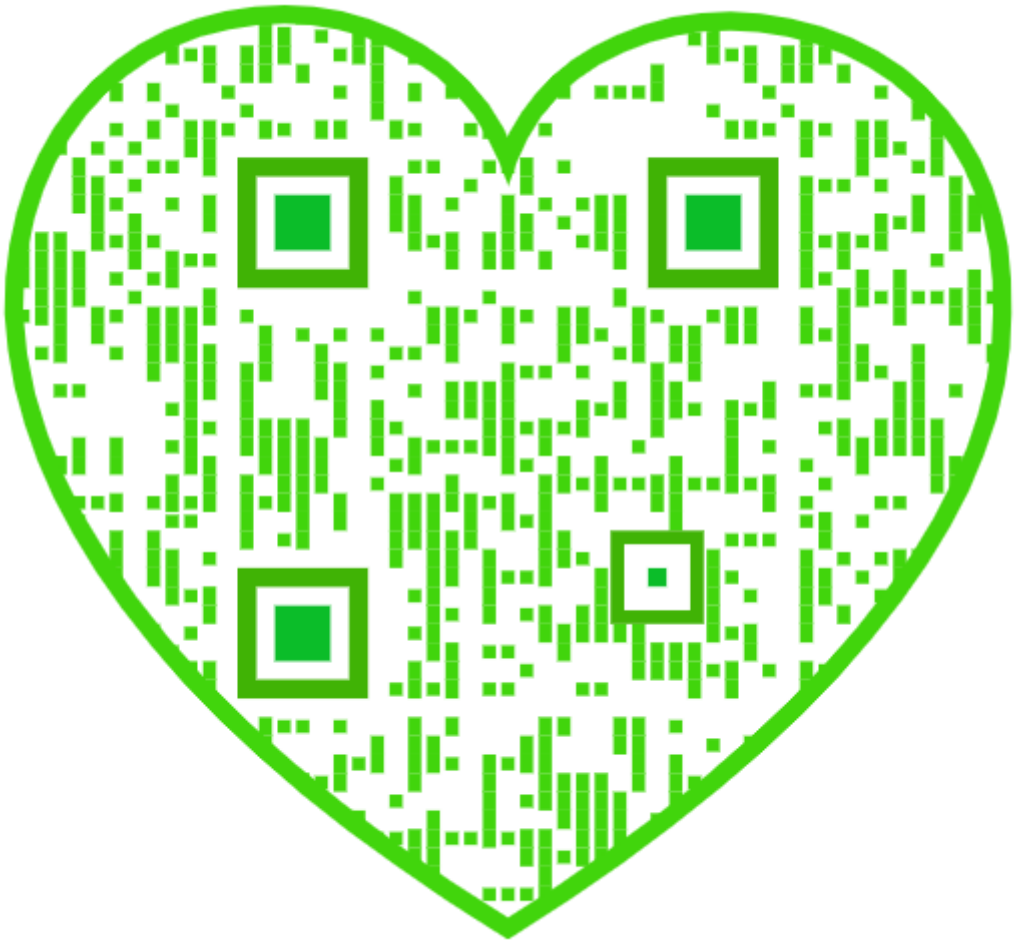

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JULY 1924

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Published Monthly by
THE ARCHITECT and ENGINEER *Inc.*
626-627 Foxcroft Building San Francisco
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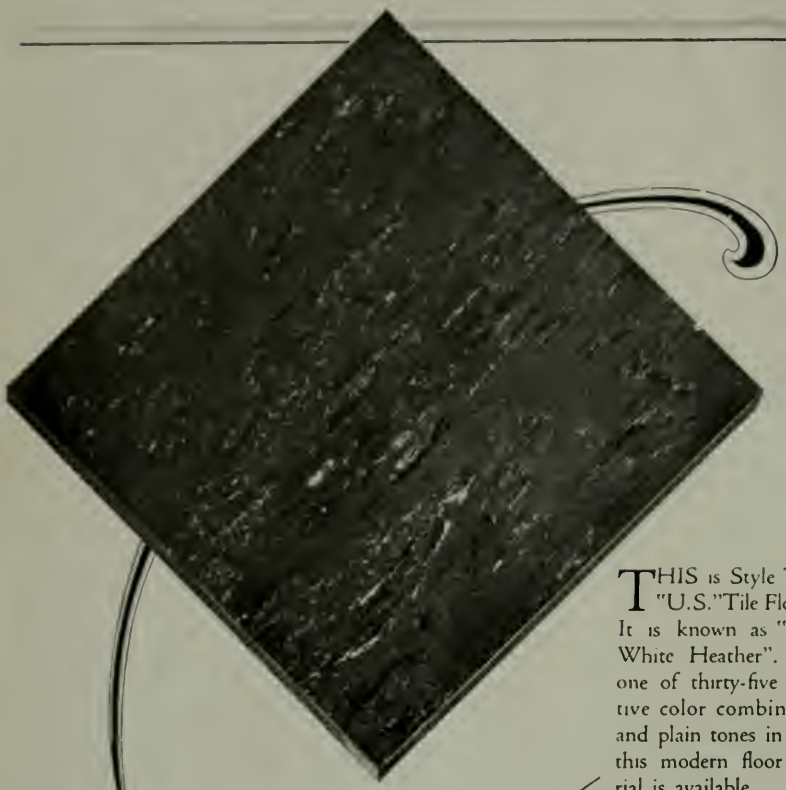

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JULY
1924

VOL. LXXVIII
No. 1

A DIALOGUE

Which Touches Upon Mr. Smith's Architecture*

By IRVING F. MORROW

PROFESSOR—We were speaking of art which endures. That which touches lightly upon casual things and transitory differences may be pleasant and temporarily appealing, but serious art must be grounded in something permanent and universal.

CRITIC—That is true only to the extent that art which is not seriously conceived can not be seriously considered. What you fail to make clear, what I suspect you have not clearly conceived, is the real nature of the permanent and the universal.

P.—Not at all. The permanent and the universal are those fundamental or essential things or aspects of things which will always be found underlying the accidents of particular cases.

C.—Very well as far as you go, but we need more tangible applications. Let me anticipate your argument. You will cite as significant examples the literature, sculpture and architecture of Greece and Rome; the same arts and the painting of the high Renaissance; in a word, all that art which, through the preponderance of the formal and impersonal elements, smacks of what we call monumentality.

P.—Monumentality is indeed the word. Is not all the art of past ages which has remained vital, monumental art?

C.—Plausible, but a half truth. In so far as it is true, it is largely attributable to a dominant concern of past times with the grandiose. I think this is not to be interpreted as a superior vision and nobility of former ages. Modern art is not a degenerate lingering of classic art, but an effort at a fresh and new thing, involving a heightening of both sensibility and freedom of expression. It was once thought that only violent events in the lives of kings and queens could be tragic —a forcible

*Earlier work of Mr. George Washington Smith was fully presented in The Architect and Engineer for December, 1922.—Vol. LXXI, No. 3.
Photographs of Mr. Smith's work are by J. Walter Collinge, Santa Barbara, California.

and effective conception, but hardly a subtle one, you will agree. Writers today have come to realize that tragedy is omnipresent, filling the lives of even the humblest.

P.—Modern writers exploit the morbid and the pathological in the name of tragedy.

C.—Pathology may indeed be tragic. The point is that mankind has experienced an enhanced subtlety in perception and expression. The evanescence of an aspect, a quality, a situation, measured by the stand-

GARDEN OF MRS. MARY STEWART, MONTECITO
George Washington Smith, Architect

ards of monumentality, does not necessarily mean a lack of human significance. Let us return to the art of architecture with which the discussion started. Gothic architecture—

P.—Pardon me, pray. Gothic architecture may be within the subject, but it is too far removed from our original case to be relevant. You will recall that we were led into argument by the houses of Mr. George Washington Smith. Now Mr. Smith's houses may be clever and captivating, but I still maintain that they are too inorganic and primitive to be valid as solutions for a mechanical and sophisticated age. They are vitiated by a sentimental misconception. It is to be

regretted that a designer of undoubted ability should resign himself to following a passing fad.

C.—If fad it is, Mr. Smith is in reality not following, but leading. His were the first houses around Santa Barbara to adopt in serious fashion the simple Spanish domestic tradition, since when the most diverse talents have realized the possibilities of the move. But that is neither here nor there. It proves nothing as to the legitimacy of the proceeding, which is the matter in dispute. You declare that these

GARDEN OF MRS. MARY STEWART, MONTECITO
George Washington Smith, Architect

buildings are inorganic. In that charge I detect a fundamental fallacy of your position. I believe that you are falling into the common error of confusing organism with plane geometry. You must realize the enormous difference between looking at a flat pattern and walking around and through a three-dimensional building. The lines and openings in a pattern represent nothing beyond themselves. In a plan they represent walls, piers, and the volume of air space enclosed. Their heights and manners of approach are of equal importance with their horizontal shapes. A pattern is grasped at a single glance of the eye; its relations are all simultaneous. A plan is never so seen; it is apprehended as a progressive unfolding.

P.—Of course I appreciate prints so obvious.

C.—I protest because you ignore them in your reasoning. There is also another aspect to the problem of organism, equally obvious but equally overlooked. There is not just one possible kind of organism. Buildings may be organized in various ways according to the manner of their use and the impressions they are to convey, as well as the methods by which they are constructed. Some buildings demand formal organization—(although even here it is my belief that the blindness or

HOUSE OF MISS M. BURES, SANTA BARBARA
George Washington Smith, Architect

inertia of designers is often dignified as an exaction of the problem); in other buildings formality and regularity would be treason to essential requirements. Picturesqueness, informality, intimacy, are surely legitimate realities. I can not admit that Mr. Smith's buildings are inorganic because they fail to conform to patterns developed outside the range of their requirements. They compose harmoniously, they develop from inner necessity, and they construct logically, thereby satisfying every essential requirement of organism.

P.—The principles of sound composition—organism, in other words—have been amply developed and exposed by classical and renaissance

designers. Loose and paradoxical doctrine is dangerous. But admitting yours for the sake of argument, what connection have these primitive Spanish informalities with realities of current American life?

C.—As much and as little as Italian and French formalities of artificial civilizations of two to four hundred years ago. The only answer to your implied stricture is that American life of the twentieth century, for historical and social reasons you know as well as I do, has not yet developed a style of architecture expressed in unique and indi-

HOUSE OF MR. IRVING WRIGHT, SANTA BARBARA
George Washington Smith, Architect

genous terms. New styles are not made by willing. They grow. It is only through efforts such as are being made by Mr. Smith, among others, efforts toward an architecture historically and pictorially harmonious, as well as satisfying modern requirements, that a style of its own time and place can be evolved.

P.—You admit, then, the untenability of your claim of originality for Mr. Smith's architecture?

C.—Originality was not the word; I was speaking of personality. Originality is uncertain and of questionable importance. Personality is essential to any vital art. But it requires two to have personality.

P.—Another paradox!

C.—On the contrary, I state only a literal truth. It is not enough for personality to exist if it is not perceived. Now perception of even obvious things is notoriously a function of training and habit. Musicians hostile to modern musical movements charge that all modern music sounds alike; whereas the critical among the initiated have no difficulty in distinguishing the real personalities. As a matter of fact, do modern compositions show a greater similarity in melodic or harmonic formulae

HOUSE OF MR. IRVING WRIGHT, SANTA BARBARA
George Washington Smith, Architect

or in spiritual content than those of the seventeenth or eighteenth centuries? I believe that no well informed and sensitive observer could sustain such a thesis. Americans regard it as a humorous peculiarity that Chinese faces are scarcely distinguishable. Bertrand Russell tells us that the Chinese ask why all American women look alike. Surely Chinese and Japanese art are as dissimilar as French and Italian, yet artistically untrained Americans are unable to tell them apart.

P.—The moral of which is probably that I complain of monotony in all this growing fad of museum Spanish only because I am incapable of seeing its variety?

C.—Such is the fact, although if you had left it to me I might have put it more politely. You distinguish differences among works in the so-called classic tradition because your taste inclines that way, and all your training has been toward discrimination among those forms. I deny that buildings so designed present greater differences or more variety than those designed in the homely Spanish tradition. Of course, every movement has its real personalities and their impersonal retainers. The simple Spanish school, so prevalent in current domestic architecture

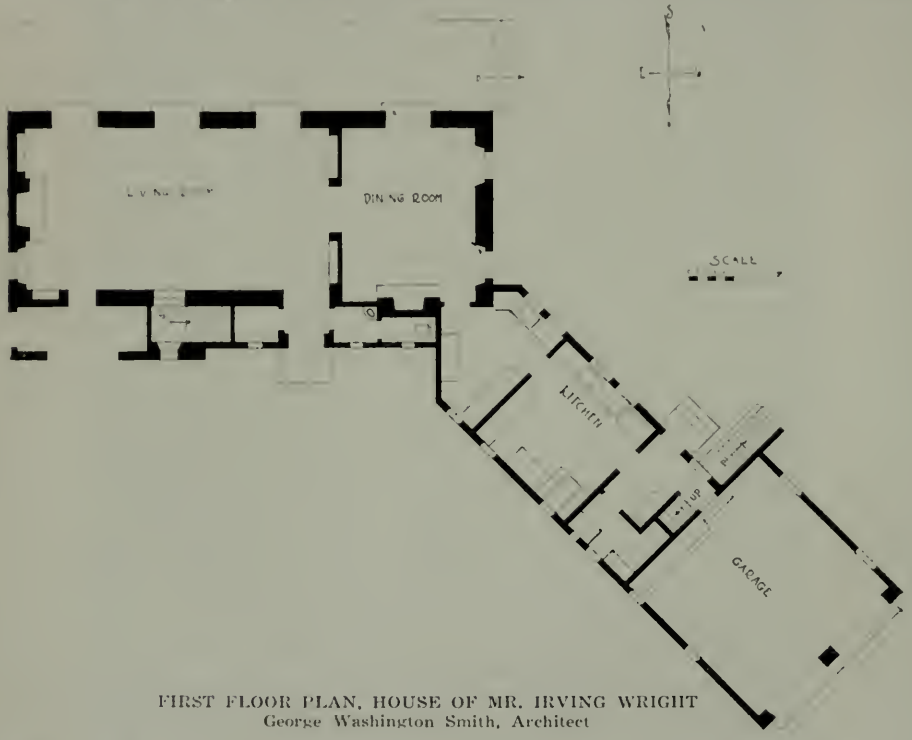
HOUSE OF MR. IRVING WRIGHT, SANTA BARBARA
George Washington Smith, Architect

in California, is no exception. It is responsible for bad work as well as good; lifeless work as well as vital; but it forms a homogeneous body, in which any sympathetic observer can readily distinguish definite outstanding personalities (what more could be said for the classical tradition?). And one of the most sensitive and individual as well as forceful of these personalities is Mr. Smith. If his work looks to you like all the rest of its kind, I insist that it can be due only to your own lack of discrimination. I am sure I could identify any new building of his without title.

P.—Your tenacity forces me to abandon each of my objections

without argument if I am merely to get ahead with presenting them. I concede the individuality and proceed to a source of irritation which vitiates this entire architectural fad, which you dignify as a school of architecture. We live in an age which is to the core sophisticated and mechanical. Under these circumstances the aping of primitive workmanship and finish is both affectation and retrogression, out of harmony with the surrounding civilization. Under prevailing technical and psychological conditions it is natural for edges to be straight, for surfaces to be true, for colors to be uniform, and so on. Conjuring up a deficient and defunct handicraft is a wasteful pose. Why deliberately relinquish what advantages we have in a misguided anachronism?

C.—You bring up an important matter, one where false steps have



FIRST FLOOR PLAN, HOUSE OF MR. IRVING WRIGHT
George Washington Smith, Architect

been made and where false steps must prove fatal. For the very vital question of sincerity is involved. It can not be denied that a certain amount of work in this movement, some of it significant as to size, is tainted with this insincerity and smacks of the museum character you mention. But it is not possible to maintain that because we have the technical ability to execute with flawless regularity, therefore we must. Much work—plastering, for instance — must still be done by hand; more work may be done by hand if one so elects. Mr. Smith habitually uses hand-made tile in floors and roofs. So long as they are of good quality who shall say that the making of hand-made tile is an illegitimate activity? If they are deliberately deformed, insincerity is involved; and insincerity is always patent. But if honestly made, they present just that human touch which man demands and which the machine kills. I mentioned plastering. Because it is possible to plaster to an almost theoretical plane, it is not legitimate to insist that it must be so done.

But when the plasterer begins consciously to nurse his accidental trowel marks, we have reached the point of affectation. We do in truth live in a mechanical age; but that does not mean that we must accept unlimited mechanism without protest. There is still ample scope for the humanly variable. I believe that Mr. Smith's architecture is conspicuously honest and sincere, and constitutes an effective protest against devastating mechanism.

P.—Your enthusiasm is almost convincing. You may yet be able to win my sympathy for this new old California architecture* In the meantime there are two parties so vitally interested that I wonder if it would not be worth while consulting their opinions?

C.—Namely?

SECOND FLOOR PLAN, HOUSE OF MR. IRVING WRIGHT
George Washington Smith, Architect

P.—The Architect and the Client.

C.—Useless, old man; utterly useless.

P.—Why?

C.—Because the Architect refuses to exploit his opinions, and the Client has none. The Architect will say, You boys talk all right; but remember that while you are talking I do the architecture you talk about, and without listening for what you have to say about it, either.

P.—And the Client?

C.—He will say, I don't know much about art, but I do know what I like.

P.—You may be right. Perhaps we had better continue the discussion by ourselves.

*The Professor is probably wrong. Nobody has yet been convinced by argument of anything he really didn't believe.—I. F. M.

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HOUSE OF MR. AND MRS. GEOFFREY S. COURTNEY, SANTA BARBARA
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Fire Resistive Houses a Present Reality*

By WHARTON CLAY, Member of the Building Construction Committee, National Fire Protection Association

IF an architect and engineer and a criminal incendiary should get their heads together, they could hardly devise a better construction for rapid destruction by fire than the present residence or apartment building with lumber joists, studs and ordinary lath. Even the plaster, which is incombustible itself, and would be considered a fire protection of high order, aids in making a series of chimneys to aid in the draft, and when this plaster is installed, as is customary, the entire interior of this chimney is lined with small pieces of rough wood easily ignited, and which communicate a fire with incredible speed throughout the structure. This does not mean that lumber must be eliminated to make houses fire-safe, but to make them fire-safe, the main supporting members must be protected by fire-resistant materials, and the myriad of small pieces of wood must be eliminated.

It seems strange that the design of fire-resistive construction should have started at the top and worked downward to the residence. It is strange that city ordinances give more consideration to the protection of the lives of transients within their boundaries living in hotels than is given to their own citizens, whose lives are in constant peril in houses that strictly conform to all the laws. It is strange that a man will demand a fire-proof vault to store a few bonds and stocks, some of which prove to be worthless sheets of paper, and at the same time will leave home light-heartedly with his dearest possessions soundly asleep in a tinder box, which, on the slightest spark will in a few moments be hopelessly involved in a rapidly enveloping fire. In fact, the modern house, if constructed scientifically at all, is constructed to permit the most rapid spread of flames that possibly could be arranged.

Lumber construction, because of its great strength, ease of cutting and fitting, and the familiarity of the workmen with it, is the most economical material on the market today, with which houses can be constructed. Attempts have been made to produce fire-resistive houses with other materials, but they have always ended in financial disappointment because of the extra burden it places upon the home owner. There is another reason, too, why incombustible materials have not appealed to the home owner. We are creatures of habit, and are familiar with wood and appreciate its beauty. We do not like to see the cold floors and do not readily respond to a different form of construction. Fortunately, there is no need for this, for within our grasp and within our means are methods by which we can make a wooden fire-safe home a reality. In fact there are many that have been built throughout the length and breadth of this land, and their safety has frequently been tested by actual fires, which, obtaining a start, are stopped before they gain headway.

Metal lath as a protection for lumber solves the problem as no other material does. It does not change our habits of constructing the building, it does not hamper the speed of erection, and it does not add greatly to the cost. It even lessens the burden on the pocketbook of the householder, because it reduces the depreciation and upkeep expense cost to a greater extent than it increases the original investment.

For over 30 years, expanded metal lath has been known to the general building public as a fire-resistive material. Notable examples

* Address at the First National Fire Prevention Congress, New York, N. Y.,

of its fire-stopping qualities have appeared from time to time. On the other hand, hundreds and even thousands of houses constructed in the ordinary manner, burn down yearly, and we thoughtlessly let them pass without inquiring into the basic reasons why houses should be so rapidly consumed and take with them so many precious lives.

The true measure of fire-resistive value of expanded metal lath as a protection for wood was not known until a short time ago; but on the anniversary of Fire Prevention Day, 1922, the Underwriters' Laboratories announced that a wood-studded partition covered on both sides with metal lath and plaster, and an ordinary wood-stud floor as commonly constructed, but protected on the under side with metal lath and plaster, would resist the intense heat of their Standard Fire Test for over one hour and remain intact and carry its load beyond that period. Shortly thereafter, they announced that ordinary lath and plaster would expose the wood behind it, under the same conditions, in about four minutes. Here, then, lies the secret of the immense life and fire loss in residence construction in America.

Fire preventionists have pointed out the comparison between the fire losses in Europe and America, and have attributed it to greater use of incombustible exterior walls in Europe and the common use of frame construction in America. Even the statistics of fires in this country are disregarded when such a conclusion is reached, for we find in the report of the Committee on Statistics on Origin of Fires, dated May 22, 1919, and issued by the National Board of Fire Underwriters, that in the column headed, "Percent of Fires Confined to Building or Place of Origin," that percentages run in the following manner: 99, 91, 98, 97, 94, 100, 96, etc., giving a general grand average for every reported city in the United States, a figure about 96 per cent.

In other words, the fire hazard in America is not due to the spread of fire such as the exterior walls might have some control over, but is due almost entirely to the fires which start in certain buildings and involve that building alone. That is, the interior construction represents 96 per cent of all the fire loss, and the control of this 96 per cent of the fire loss in this country must be the object of the thought placed on improved construction. External construction concerns only four per cent of the fires, therefore, it is strange that we have given so much consideration to the four per cent and so little consideration to the 96 per cent.

Insurance bodies and Fire Preventionists have given more consideration to the wood shingle than they have given to the wood lath. In many places they have legislated against wood shingles, which are a most economical and beautiful roof treatment, when not more than two per cent of all the fires in the country can possibly be attributed to conflagrations involving more than two buildings at a time, and they have neglected to provide safety from internal fires which form 96 per cent of the hazard. They have given large credits for incombustible exterior walls and they have allowed ordinary window glass to be put in windows, vitiating entirely the undoubted safety of the wall itself, and from an engineering standpoint, have neglected the adage that a "chain is only as strong as its weakest link." It is true that a stucco-covered frame structure would be more fire-resistive than the same structure covered with siding, but a conflagration will enter the brick building as quickly as the frame building.

My purpose is not to object to giving credits where credits are due. It is to bring before this Fire Prevention Congress a plea to properly

weigh and measure the fire-resistive advantage that better interior construction will provide over a period of years.

Not only does expanded metal lath and plaster resist the fire which is endeavoring to break through the plaster coating and get to the interior of partitions, but any fire which originates inside of a partition has little to feed on with expanded metal lath and plaster on two sides and a flat piece of wood studding whose edges are embedded in plaster as the other two boundaries. True, this wood can ignite, but the horizontal bridging almost universally placed midway between floor and ceiling of these partitions and walls confines such a fire within a very small bulkhead, and fire stops can also be placed at the floor levels to further reduce the chances of spread of fire. The condition inside of a partition, lined with ordinary rough lath of ideal size for starting a fire, is apparent.

It is, therefore, not necessary to depart from the time-honored wood-stud and wood-joist construction, whether surrounded by a masonry wall or a wood-studded wall covered by either wood siding or stucco, in order to obtain a fire-resistive interior that will give ample protection for the large majority of fires which statistics show are likely to involve the interiors.

There is a type of partially protected fire-resistive construction which will give the greatest protection for the least extra cost. These are houses which are "built like a battleship," in which the expanded metal lath is used to protect the most vulnerable points, as the battleship designer puts the heaviest armour around the turrets and around the boilers. These vulnerable parts are:

1. On all stud bearing partitions and walls and fire stops between studs. (Fire stops to be metal lath basket-shaped to fit between studs. coated with plaster or cement, and filled with incombustible materials).
2. On ceilings under inhabited floors, especially over heating plants and coal bins.
3. At chimney breasts, around flues and back of kitchen ranges.
4. For stair-wells and under stairs.
5. Exterior walls.

These are the positions in which the greatest probability of fire exists, or the positions in which fire, if it does start, will do the greatest and quickest damage. While this is not an ideal or ultimate solution, its encouragement is a step in the right direction, and on account of the slight additional expense and the crack-resisting advantages can be more quickly advanced than complete protection.

Fire-resistive houses are a present reality. They simply have not been recognized.

A house is being built in one of the suburbs of Chicago as a model of this type of construction. It is being built with the purpose of calling to the attention of the fire prevention world that a fire-resistive house can be built at little extra cost, along the most artistic lines, without deviating in the least from the requirements of the modern housewife as to exterior appearance or internal beauty. In fact, this house will be free from upkeep expense of repairing plaster cracks and redecorating wall surfaces because of stains or dust marks following the contour of ordinary lath, and will be absolutely safe for the lives of the children who are to live in it. The extra cost will be not more than two per cent of the cost of the building.

Fire-resistive houses of this general type exist in many communities, but they are not recognized for their intrinsic value, and they

are not encouraged by the insurance fraternity whose powerful influence could do so much to bring a realization of the lessened risk by adequate compensation through reduced rates.

The house I mentioned here has expanded metal lath covering the underside of all floors and both sides of all partitions and walls. The built-in garage is separated completely from the house by this one-hour rated construction, and there is only the smallest possible chance that any fire, however started, could gain headway fast enough to get out of control.

The insurance world has given great thought to the question of conflagration, but they have considered conflagration only in the terms of a multiplicity of buildings. There is no reason why they should not take the page from the experience of the Naval engineers and encourage a form of design which will make it impossible for any fire to get out of its room of origin for one hour. The Naval architects, analyzing their problem, found that when a leak occurred in the hull of a vessel, that the whole vessel was doomed. They, therefore, developed a system of bulkheads which makes each compartment so water-tight that the vessel will float even if an entire compartment is filled with water. Fire prevention engineers have recognized this same principle in large buildings where they have built fire-walls, equipping each opening with automatic self-closing doors, and the same engineering principles can be adopted in the modest dwelling. Conflagration of the entire structure can be reduced to the burning out of a single room or compartment. The fires would hereafter be reduced in total damage to the damage in the room of origin only.

Some progess is being made toward the introduction of a course of instruction in our public schools for the elimination of carelessness in the mind of the American youth, but any of you who have children agree with me that the American youth is very careless and will continue to be so, but probably not nearly as careless as the American adult. Much can be gained by this propaganda, but it is a long process that may and may not bring the desired reduction in fire losses. One thing is certain—butl-in fire protection is a constant protection, and the fires which originate, outside of all human carelessness, can only be stopped by built-in protection.

Therefore, I say that fire-resistive houses are at present a reality. Their recognition is but a matter of right thinking along the engineering pinciples, weighing the relative duration of construction as ordinarily built with rapidly inflammable lath, and properly considering the relatively great importance of interior fire protection against the small amount of external hazard.

* * * *

Millions Dependent on Building Trades

Secretary of Labor Davis recently stated as follows: "More than 11,000,000 of our people are dependent for their living upon the construction industry and 22 per cent of all the skilled and unskilled labor of the country is engaged in the building branch alone. Some 250,000 freight cars are required to handle the materials. Our building bill is $200 per year for each family in the United States." Mr. Davis concluded: "It is truly the chief barometer of the business of the country. When construction gains, prosperity is with us. It is the great outstanding influence for good or bad in our financial progress."

CHATEAU DE VAUX-LE-VICONT
South Exposure

GARDENS, CHATEAU DE VAUX-LE-VICONT
Looking South

A Chateau and Its Gardens

(From the Wanderer's Notebook)

By E. N. KIERULFF, R. S. M.

OF the few chateaux within an hour or two of Paris, that of Nicolas Fouquet, Comptroller of Finances under Louis XIV, and costing 720,000 gold Louis (Louis d'Or) is a striking example of the period, and is set in a park and formal gardens of magnificent proportions.

The chateau lies in rolling country some three miles from the town of Melun and is reached in an hour from Paris. Its main facade has the southern exposure but approach is from the north through very fine iron grilled gates, past the lodge and with the fine old stables looming up over a close hedge. The drive sweeps around in an arc through a small hedge-enclosed garden formally, but most charmingly laid out, and with an air of intimacy. In point of fact, though even the other gardens stretch away for almost a mile to the south, there is about them that intimate touch, a warmth that one cannot explain in so extensive an outlay of landscaping.

The gardens are divided by clipped hedges of box and yew, by parterres and by terraces. There was no stinting of time, thought or expense to make them one among the beautiful gardens of France. There has been an ingenuous and lavish use of water, shrubbery, granite, porphyry and marble.

Beginning with the terrace upon which stands the house, and divided by a low walled moat (now dry) the gardens by means of terraces with curving marble steps and granite balustrades, are "stepped down" at regular intervals and are intersected by broad paths and yew and mulberry hedges. Some five hundred yards from the chateau the gardens are terraced at the edge of a natural basin, whose southern slope stretches away for three or four hundred yards in unbroken lawn to merge finally in the densely wooded park. There are stable and kitchen gardens, each a gem in itself, an orangery, alleys of yew and cedar bordering the edges of the main gardens, and from these radiate little by-paths that lead to half-revealed, half-concealed garden pieces—benches and statues in moss and lichen mellowed marble.

Only an intensive and thorough study will serve to demonstrate the thought, the labor and the energy expended in the making of one of the loveliest examples of formal landscape gardening in a small private estate in Europe.

The chateau I shall leave for the architect to describe, but even a layman may appreciate its graceful symmetry and proportions, the Mansard roof in perfect condition today, and one feels that it was and perhaps is one of the most complete and handsome country estates in France.

In closing, a touching little episode of those bygone days is related in connection with the chateau and gardens of Vaux-le-Vicont. Shortly after its completion the King was a visitor. Eagerly its owner escorted his majesty through the spacious salons and about the lovely gardens. The King was enraptured with praise and enthusiasm. His visit concluded he departed for Versailles. A short time after the owner received one of the dreaded and unescapable "Lettres des Cachet," and guilty of no other crime than invoking envy in the heart and mind of his sovereign, he was taken to the Bastile where he languished until his death, and lovely Vaux-le-Vicont became annexed to the State-property of the Crown.

SOUTH EXPOSURE OF CHATEAU
Portion of gardens

ORNAMENTAL PIECES—YEW HEDGES

LODGE AND KITCHEN GARDENS

PORPHYRY AND MARBLE WALLS, CIRCLING NATURAL BASIN, VAUX-LE-VICONT

The Seven Deadly Sins Against Church Architecture*

By HALFORD E. LUCCOCK

ONE of the most fascinating portions of the Bible is the first chapter of Job. That section of it in particular which records the conversation between God and Satan has always had an unfailing interest for me. When Satan informs the Almighty that he has been going up and down the earth, I wonder just what he had been doing. The correct answer, no doubt, would be that he has been doing a little bit of everything. But I have always had the feeling that, among other things, he must have been spending a good deal of time in designing and constructing churches.

For many church buildings would seem to be designed to throw the minds of Christian folk into confusion and to disguise the beauty of holiness from the eye of those who know it not. It has often occurred to us that one of the sure evidences of the divine origin of Christianity is the fact that it has survived so many churches built for the purpose of furthering it. There must be something in religion after all, if it can abide and wax strong in spite of the many hundreds of churches erected in its honor.

I would not say anything against church architects in general lest it be thought I am drawing an indictment against a whole profession, which is, of course, as impossible as to indict a whole nation. The great majority of church architects are men of outstanding service to the cause of religion. They have been ministering angels who have brought strength and beauty to the building of the sanctuary. Unfortunately, many building committees have not availed themselves of the best creditable architectural service.

Perhaps it may be in the interests of grace to list some of the more common iniquities in church planning which we will call the Seven Deadly Sins in Church Architecture.

1—The Basement Sunday-school

The worst sins are always those committed against children. It is against the children of the church that building committees and architects have sinned most grievously. The Sunday-school packed away in a deep basement is an abomination unto the Lord. Jesus set the child in the midst. Alas, that so often we have set him in the cellar! The infant class buried down somewhere to the port of the furnace are like little prisoners of Chillon held in the fastness of a tower, shut away from the sunlight and the sky. Jseus said, "Suffer little children to come unto me." In our thoughtlessness we frequently use an abbreviated form of those great words and say, "Suffer, little children!" And we see to it that they do suffer. Frequently this is only the result of thoughtlessness. Sometimes it is the result of a diabolical striving for efficiency. O what crimes are committed in that name! An aggressive building committee says, "Here is a perfectly good cellar. Why not use it for the Primary Department? The woman's class would make too much of a kick, but we could put it over on the children. They are not old enough to kick."

Such a use of the church basement is almost an unforgivable sin. It is a sin against light, a sin against health, a sin against beauty. Recently we inspected a church which had been made over at considerable

*Contributed by the Bureau of Architecture of the Methodist Episcopal Church.

expense. One of the "improvements" was a deepening of the basement so that basket-ball could be played during the week. On Sundays the Primary Department descended to this deep cave. It reminded us of nothing so much as of the pit in which his brothers threw the young Joseph. A child's first religious impressions, and these are frequently the most lasting, are made in the surroundings in the Sunday-school. These should be the most attractive, certainly as far as the use of those great gifts of God, light and air, are concerned. A recent play was entitled, "Come Out of the Kitchen." Let the next great Sunday-school movement bear a similar slogan, "Come Out of the Basement!"

2—The Akron Plan Sunday-school

Throughout the length and breadth of this land there must be 100,000 churches whose Sunday-schools are built on the Akron Plan. Perhaps that is an exaggerated number, but we have seen almost that many ourselves. As we go from state to state we ask ourselves the question, "Can any good come out of Akron?" And from every hill and valley echo answers, "Not any more." I should think that the good folks who live in Akron would apply to the Supreme Court for an injunction against connecting the name of their fair city with such an educational monstrosity. The Sunday-school building or arrangement whose chief feature was one assembly room with a number of classes opening from it in a sort of semi-circle was a great step forward in its day. The trouble with such a Sunday-school room today is that the whole theory of religious education has progressed to the departmental idea, so that the one room designed chiefly for a mass meeting does not meet the situation at all. The Akron Plan is emphatically **not** a plan of salvation today. Yet the tragedy of it is that such Sunday-schools are still being built by churches which ought to know better. Frequently building committees and architects imagine that they have the latest thing in Sunday-schools where, as a matter of fact, such a Sunday-school is as out of date as the old-fashioned high-wheeled bicycle. The previous question before a building is attempted should always be, "What is the Sunday-school for?" Get that question decided and then build to meet that need. Too often the cart goes before the horse. That is, the room is designed first and then the educational policy has to be warped to fit the ready-made building. When the building committee or architect have no conception of a modern departmentalized Sunday-school the advice of Church Bureau of Architecture should be secured. There has been considerable progress in religious education since grandfather was a boy.

3—The Pulpit in a Corner

It was evidently very common a generation ago, when building churches, to put the pulpit and chancel in one corner of the room. This happened very frequently where the room was square. Of all possible shapes for a church the square room is almost the worst. When the room is square and the pulpit is backed into a corner the results are very distressing. To architects designing this sort of thing we commend one text from the New Testament, "This thing was not done in a corner." The most uplifting worship does not proceed from a corner. Where the audience room opens out like a fan it keeps the minister swaying from side to side, now giving an admonition to the sheep on the left, and then exhorting the goats on the right. The flow of eloquence may be electrical, but it is too much like an alternating current —now it is on, now it is off. It is trying on the eyes to keep them

riveted on a corner, and the result is that it is very hard to create a worshipful atmosphere.

4—The Preponderance of the Brass Organ Pipes is an Unfortunate Feature of American Protestant Churches

It is very common to have the chief feature of the front of the church a vast expanse of shining brass. This is very natural, and we must be lenient in our judgment of this feature of church architecture. Yet its continuance ought to be challenged in the interests of worship. Brass organ pipes have no symbolic value. They do not minister to the aesthetic sense. They call forth no religious emotions. There is nothing conducive to worship about them. To begin with, they are usually a monstrous deception. The pipes are wooden dummies painted to look like gold. Their presence as the chief and only feature at the front of the church is due to a meaningless tradition. They are not beautiful—distinctly the opposite. Moreover, they are hypnotizers. Their glare is responsible for a great deal of the drowsiness in church. They usurp the space that could be used for some window or decoration with a real religious value. Finally, it is not necessary to have the pipes placed where the whole audience must look at them continually.

In the Old Testament people worshiped the Golden Calf. Today we bow down before the Golden Pipes. Let any open-minded person compare the interior of a Roman Catholic church or an Episcopal church, with its altar, with the barrenness of the average Protestant church. They will find the latter far less rich in aids to religious inspiration.

5—Sliding Doors

Certain periods in literature are marked as the Victorian Age or the Georgian Age. Church building in the United States evidently went through an age about a generation ago which might well be called the Age of Sliding Doors. Building committees and architects seemed to revel in erecting churches whose chief feature was that, by a clever use of partitions and sliding doors, the rooms could be arranged in all sorts of combinations. The church room opened into two or three other rooms, so that the sermon and music had to be broadcast in all directions. Such a rambling, disjointed church gave a loose sense of unity; the doors left a bare, blank expanse; the rooms were invariably draughty. The result was a number of rooms, none of which were particularly good in themselves. Nor were they good in combination. Even this kind of church is still built apparently "with malice aforethought."

6—Pews

A great many church pews are plainly violations of that section of the Constitution of the United States which forbids cruel and unusual punishments. We do not believe today very strongly in the spiritual value of mortifying the flesh, yet many of the designers of church pews would seem to have been ascetics who believed in the spiritual uplift of suffering. One wonders if the designers of some church pews have ever sat down in them. The very common type of church pew with a high, straight-back and narrow seat well deserves to be called the devil's masterpiece, for it is hard to imagine anything better calculated to neutralize all the inspirations that might come from the pulpit and the choir loft. This pew is a common infliction in expensive new churches which are copying old architecture even to the pews. Thus they make void the work of God through their tradition. Usually this matter of pews can not be laid to the charge of the architect. In most

cases it will be the chairman of the building committee who must answer for it at the Judgment Day. A comfortable seat is a means of grace. It is an unfailing aid to the minister as he seeks to create spiritual values. Expenditures designed to furnish real rest and comfort to the worshiper have a distinct spiritual quality.

The day will come also when the children will not be disregarded as at present. Comfortable pews or chairs will be designed for them. If you wish to know how it feels to any child at church try sitting on the kitchen table with your feet held straight out. You will probably not wonder so much how children are restless in church.

7—Air

We are fond of saying that there is no conflict these days between religion and science, yet many churches stress every Sunday an inevitable conflict between religion and science. That is, science says emphatically that bad air—carbon dioxide—is a deadly drug which deadens the brain. Science is thus in conflict with the religion which we try to inculcate in such an impossible atmosphere. The subject of church ventilation is one of the mysteries of the ages upon which no one should be dogmatic. Church windows seem to be designed on a different theory than all other windows except those in mausoleums. Most of them do not open. They are dummy windows. Or if they do open, they do not open at the top. They open right on the backs of the congregation, and frequently the dilemma must be faced that either the congregation must suffer from bad air, or half a dozen noble souls must be willing to brave pneumonia in order that the air may be provided.

Proper ventilation facilities must be provided at almost any cost.

Now, in the conduct of worship there abideth three things, art, music and air. But the greatest of these is air. Neither Chrysostom nor Henry Ward Beecher is any match for carbon dioxide.

* * * *

Brick Sales Show Value of Organized Effort

"The response of this old and honorable industry to co-operative advertising is one of the remarkable examples in this country of the value of organization effort," says the Monthly Digest of the Common Brick Manufacturers' Association. "Common brick showed a loss in consumption between the years 1909 and 1919 of 70 per cent. In the five years since 1919 national advertising has put the industry back to a point within 20 per cent of its highest consumption. Officials of the national association are confident that with one more year of good business the industry will have entirely redeemed its losses and that the consumption of common brick in the country will be as high as it ever has been."

* * * *

Perhaps a Set of Floor Plans on a Shingle

"The English language is the richest and most vigorous of all modern languages," says a Harvard professor. The architect rises to remark that it is neither rich nor vigorous enough to describe the man who says he doesn't need a set of plans for the house he is going to build, because his brother-in-law, who used to work for a carpenter, has offered to make some pencil sketches for him.

The "Or Equal" Phrase

THE use of the specification phrase "or equal," probably is the result of a lazy mental attitude, rather than because of the specifier's desire to avoid the making of a choice. Much effort has been expended by manufacturers of building materials looking toward the elimination of this phrase in specifications, and there is no doubt that it is used to a far less extent now than formerly. As with every question, however, there are two sides to this one, and the careful architect will not permit the entreaties of the manufacturers to sway him in the choice of his words unless his judgment coincides with the belief of the person urging the elimination of the phrase in a particular instance.

COMMUNITY APARTMENTS, 2006 WASHINGTON STREET, SAN FRANCISCO
C. A. Meussdorffer, Architect

A word of caution may be well in view of what seems to be a universal endeavor on the part of advertisers to force a phrase that is definite by the name of a particular product or names of several manufacturers of the same kind of product. There are times when the exigencies of the occasion demand that the architect specify a material with the phrase "or equal thereto" appended. His judgment alone can rule as to whether the use of that phrase in the particular instance is proper. There is no reason why one of several materials cannot be set up as a standard if the architect really is willing to accept without ques-

tion any other material that may be submitted for his approval as long as the concensus of the profession is that there is equality.

But this, it may be said, is the crux of the situation. There are many cases where the choice of the architect is based on desiderata that include the submission of other items on the basis of equality with that specified. The situation of the item in building construction, the facility of its use, or the permanence under the use conditions, may call for a special article which only one manufacturer makes. Further, if the architect uses the "or equal" phrase, in order that he may maintain friendly relations with one of the advertisers or manufacturers of material which he has not specified by name, it would be better for him if he would frankly tell the one in evident disfavor that his material could not be considered and eliminate all chances for argument. Where the name of a manufacturer or a particular item is specified, to the exclusion of any others, the specifier sets up a target at which all the competitors will shoot, and if the architect is not desirous of fostering warfare, he will not invite it in that fashion. It is difficult enough to make the specifications precise and absolute. Arguments always will arise, no matter with what care the specifications are written, as human nature is unavoidably quarrelsome where competitive business rules.

If the architect is able to write his specification without naming a particular manufacturer or item, he may eliminate some trouble, but on the other hand, other difficulties may arise. He may be overrun with requests from all the producers of that item to approve the material submitted, and if disfavor annoys any of them, they may appeal to the owner. This, of course, means the introduction of unfortunate controversies that will be three-cornered unless the owner accedes to the instructions of his architect. Some owners unfortunately feel that when an architect specifies by name he is unduly favoring that person, and the backbone of the architect must be strong enough to support his judgment after it has been expressed in the specifications. The wise architect will analyze each specification for material on the basis of general worth, serviceability, and cost, and after making his choice, will see to it that the situation is maintained in his control. So, while the phrase "or equal" as a general rule should be eliminated from specifications, an architect should do his own thinking on this matter and not follow blindly the suggestions of manufacturers or material men.

—Monthly Bulletin, Illinois Society of Architects.

CONSTRUCTION MATERIAL COSTS IN THREE YEARS

	N. Y.	Chgo.	S. F.	N. Y.	Chgo.	S. F.	N. Y.	Chgo.	S. F.	N. Y.	Chgo.	S. F.
	January 1921			January 1922			January 1923			June 1924		
Structural shapes, 100 lb.	$3.58	$3.58	$4.70	$2.63	$2.63	$3.10	$3.14	$3.02	$3.25	$3.59	$3.30	$3.60
Structural rivets, 100 lb.	5.08	5.08	7.05	3.50	3.43	4.50	3.85	3.75	4.75	4.00	3.75	5.00
Cast iron pipe 6" and over, ton	63.30	64.10	87.65	48.00	42.00	50.00	55.50	51.20	55.00	63.60	60.20	59.00
Cement without bags, bbl.	3.10	2.17	3.09	2.25	1.97	2.73	2.70	2.05	2.71	2.60	2.20	2.61
Gravel, $\frac{3}{4}$", cu. yd.	3.00	2.75	2.50	1.75	2.00	2.25	2.00	2.25	2.15	1.75	2.00	2.15
Pine, 3x12 to 12x12 and under, M ft.	50.00	55.00	26.00	49.00	44.00	28.00	59.00	52.00	35.00	60.00	53.50	30.00
Lime, com., lump, bbl.	3.30	1.65	2.25	3.00	1.40	1.75	3.00	1.40	1.75	3.25*	1.50**	2.10
Common brick, delivered, 1000	27.70	15.00	20.00	20.40	11.00	18.00	23.50	11.00	18.00	23.65	11.00	18.00
Hollow partition tile, 4x12x12, per block	.244	.108	.12	.111	.065	.11½	.123	.067	.108	.1162		.108
Linseed oil, raw, 5 bbl. lots, gal.	.73	.85	.79	.79	.81	.89	.93	.98	1.04	.98	.94	1.05
Common labor, hour	.80	1.00	.81¼	.60	.72½	.62½	.60	.72½	.62½	.75	.82½	.62½

*Per 280-lb. bbl. **Per 180-lb. bbl.

The Architect's Interest in the Furniture of a Home

IN recent years the question of interior decoration and its relation to architecture has been the subject of a number of articles in architectural and interior decoration magazines. It is probable that architects of substantial practice—those who take pride in their reputation as architects—are giving quite a good deal of attention to the selection of all elements of interior decoration after the design of the house and its construction has been determined.

Nevertheless, many a beautiful home that is authentic in design has been spoiled by the choice and placing of furniture and by the use of colors. Selections in many instances produce hideous results and architects have been known to say that while they were not averse to having exteriors photographed, they did not wish an illustration of interiors made because of the furniture that has been used.

Some clients will wish a well-designed home of say—the Colonial or Early American period, or one of the English periods that are now so popular. They then will be charmed by some piece of Italian or French furniture and will attempt to build around one or two such pieces an atmosphere that is entirely foreign to the general architectural atmosphere of the home. One architect skilled in interior decoration, has said that there is no objection to placing in an Early American home, a piece of Chinese lacquered furniture or several pieces of Italian furniture, if these odd pieces are of a period contemporary or antedating the early American period. This is so for the reason that in the Early American days ship owners were in the habit of picking up odd pieces of furniture in foreign countries to present to their wives upon their return from a trip of a year or more. These ship owners of course would not have bought furniture of a period later than the one in which they were living. Architects, however, occasionally, and owners, quite frequently, will do now what the original owners could not possibly have done.

It does seem that the architect, knowing the needs of his clients, and visualizing the type of home they wish, should impress upon them at the start of the work, that their taste in furniture should be determined, and the house built around the furniture they wish to enjoy. He should not stand by and see the home spoiled by the use of atrocious furniture, furniture that has no home feeling, especially when a few, well-chosen pieces, or a careful selection—be it ever so economical—is made for the most important rooms in the home. A good home is a pride not only to the owner, but to the architect, and one's friends inevitably have a certain sense of pride in the possession of a friend who has a home that is graceful, satisfying, home-like and restful. The architect can well afford to spend a short time in discussing furniture and other items of interior decoration with his clients, says a writer in the Bulletin of the Illinois Society of Architects. Discussions of equal value may be carried on in collaboration with furniture designers who are available in most of the retail houses.

Unquestionably, the use of good furniture demands the selection of a certain period of furniture design, or contemporary periods, all of which may be accomplished by the use of authentic reproductions, produced by firms that put honest workmanship and artistic feeling into the character of their products. There are manufacturers of furniture in this country that do splendid things in the Italian, Spanish and Early American periods. These firms are glad to place at the disposal of the

architect, experienced decorators who also are salesmen, and invariably it will be found that the suggestions of these decorators, are not made so much in an effort to "puff" their sales, but to give honest, authentic furniture in good reproductions. The personal interest of the architect can be expressed in the furniture of the home as well as in the architectural design, and many architects are neglecting a wonderful opportunity to please their clients.

* * * *

More About Efflorescence and the Remedy

A correspondent writes:

"In the May issue of The Architect and Engineer we note an article on 'Efflorescence: Its Cause and Remedy.' In connection therewith colorless waterproofing compounds are referred to and then mention made of 'sodium silicate' and 'magnesium fluosilicate' as appropriate applications. In this connection it may be of interest and possibly of value to your readers to call attention to investigations made of colorless waterproofing preparations by the Bureau of Standards proving these two preparations to be of little value.

"This report may be found in the Bureau of Standards Tecnologic Paper No. 248, page 53. Being a government agency the conclusions given are, of course, general in their nature and do not refer to specific products. Our further investigations of the subject, however, enable us to interpret these conclusions and to advise that the preparations which best fulfill the requirements as therein outlined and therefore constitute the most permanent and satisfactory waterproofings, are Dehydratine No. 2 and Minwax.

"We have found that clear Driwal is also effective at first, but is not so permanent as the other two. It has the advantage, however, that it does not discolor or darken the color tone of stone, stucco or other material when first applied, whereas the two products first mentioned will darken and change somewhat the color tone, but this discoloration later disappears, leaving the facing material in its natural light color tone."

* * * *

Early Use of Paint in America

Linseed oil was first made in New York, in 1715. Pigments were all imported. In New England there was much prejudice against the use of paint, it being considered a sign of worldliness and vanity. In 1630 a clergyman in Charlestown, Massachusetts, was haled before the Council for having the interior of his house painted, and during the ensuing forty years there was not a painter in all New England. Still, by 1759 the use of paint had become general throughout the country, the white house with green blinds for many years being the common form of exterior painting in all parts of the United States. This manner of painting frame houses is today enjoying a wide-spread popularity.

* * * *

Buildings Versus Automobiles

The Cleveland Trust company, in a recent statement, points out that the American people are spending $2 for automobiles for every $3 of outlay for new buildings—not merely for homes and dwellings, but for all kinds of buildings. The statement continues that during the past four years motor expenditures have amounted to about $6,600,000,000 and those for new buildings about $10,000,000,000. Frequently nowadays the newly married rent a few rooms and live in their car.

THE
Architect and Engineer
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Founded 1905 by E. M. C. Whitney
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Published Monthly in the Interest of the Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast by The Architect and Engineer, Inc.

PUBLICATION OFFICE:
627-629 Foxcroft Building, San Francisco
Telephone Douglas 1828

The publishers disclaim any responsibility for statements made in the advertisements of this magazine.

Terms of Subscription
(Including postage) to all parts of the United States, $2.50 per annum; to Canada 75c additional; to all Foreign points $1 additional

Vol. LXXVIII JULY, '24 No. 1

A LIFE rich in self expression, freedom and service is blessed indeed, but thrice blessed is that life which, motivated by these objectives, leaves things of beauty as a heritage to mankind.

OUTDOOR THEATRES AND STADIUMS

Readers of the August number of The Architect and Engineer are promised a treat in a richly illustrated article on "Outdoor Theatres and Stadiums in the West," by Mr. Emerson Knight, the well known San Francisco landscape architect. Photographs have been assembled from all worthy or interesting examples of architectural, naturalistic and garden types of theatres found in our Pacific Coast states. No pains have been spared in an endeavor to secure the best views and the most authentic information for captions, with the aim of making this the most complete, comparative record of the development of the open air theatre and stadium in the West to date.

The response on the part of architects, artists, private individuals, photographers, civic bodies and institutions has been quite general and sincere, proving this to be a timely and vital subject. The author, in writing for data and photographs, mentioned the July issue as the date of publication, but the quantity of excellent material compels us to postpone the presentation to the August number. If any of those who have not contributed to this series of photographs wish also to be included, they should forward views immediately to Mr. Knight, 9 Geary street, San Francisco. Those who have sent in prints but have omitted valuable information such as the architect's name, seating capacity, date of construction or uses of theatres and stadiums, are urged to write the author at once. Schools, clubs, institutions, individuals and Chambers of Commerce whose interests along this line are keen should advise in advance of publication the approximate number of copies of the issue they will require.

MODERN design is far from being at a standstill. When the best work of today shows constant modification and adaptation with an avoidance of imitation, we can hope for the development of a style that is fully as expressive of this age as any earlier style is of its own.
EDGAR R. THAYER.

PROGRESS IN ARCHITECTURE

It is no doubt true that any given order or style of architecture represents centuries of growth and therefore for the present century to develop a new school would be little short of impossible; some critics to the contrary notwithstanding. However, in a nation as young as this one, with all of its traditions inherited from the mother countries of those who have combined to make it, a style of architecture that is entirely of this country is not to be expected.

Even in its relatively short period of development, the architecture of this country has shown unusual progress.

The development of structural steel and reinforced concrete has contributed to a new treatment of our commercial buildings that marks progress and in the development of the American country house we find still further advancement.

The architectural profession is not without its copyists. There are those who lack originality and independence but they are in the minority. Certain designs have become stereotyped and standardized. The bank building or school building which does not represent a formula is to be commended.

No system of elementary training has been devised which takes the place of a thorough study of the orders of architecture. Although the individual may never express himself in terms of column and entablature, the lessons in scale and proportion which the orders teach give a working knowledge and a refinement which can be acquired in no other way. The designer who is best grounded in architectural history and tradition is likely to attain the most originality with the greatest success.

That which is best in building is that which is most genuine.

INDUSTRY NEEDS MORE RECRUITS

With the growing scarcity of good mechanics it is no wonder leaders in the building industry are perturbed about the future. Encouraging more recruits by providing night instruction in our public schools has improved conditions somewhat, but if the young men decline to take advantage of this instruction, as seems now to be the case, all the schools in the world will not solve the problem. Just how seriously the youth of today is interesting itself in the building industry of tomorrow is related by Architect D. Knickerbacker Boyd of Philadelphia who, in addressing several hundred high school pupils in an Eastern city, asked for a showing of hands of boys who thought they would like to become identified with the building trades. We will quote Mr. Boyd verbatim that the reader may form his own conclusions:

"Did one boy acknowledge that he might like to be a bricklayer, a plasterer or a carpenter? Not one. Plumbing? Yes; a few boys rose. Electrical workers? Ah, yes. Almost a stampede. We tried all the callings, even to drafting and architecture. Many boys were willing to try these well-crowded ranks. Few wanted to be painters, but one girl said she wanted to be an interior decorator.

"Then we tried the negative side of the question. One boy admitted he did not want to become a carpenter. The reason? Said he, 'Because I do not want to work with my hands.' I asked him, 'Are they deformed or rheumatic?' And he said, 'No; it is because I want to work with my head.' Here I turned almost minister and told him why he would have to use his head in order to use his hands.

"But the climax came, and the end of the all too brief and instructive, to me, hour when one boy said he wanted to become a superintendent. When I asked him why, he calmly and frankly said, 'Because, Mr. Boyd, when all these other boys are working for you on a building they will need a boss and I would like that job best.' Here followed a final talk from me about the necessity of privates in the industrial army and what would happen if everybody wanted to be an officer."

ARCHITECTURE has been called the mother of the arts. It results from a blending of Science and Art. Some successful architects are primarily constructors or builders; some, administrators or organizers; and some, artists. All should, however, have a deep appreciation of and sensitiveness in all the arts.—School of Architecture, University of Oregon.

WHY THE ARCHITECT?

Los Angeles, Cal.
June 25, 1924.

Editor The Architect and Engineer,
San Francisco, Cal.

I have enjoyed reading your magazine very much. Have you ever printed any articles on "The Advantages of Employing an Architect"? What does an owner gain by having an architect prepare his plans and specifications and supervise the work, over having his builder do the same? Many builders now prepare plans for bungalows, flats, apartment houses,

small stores, etc., and the question naturally comes up, why go to an architect —what is to be gained, is it worth his fee? etc. Can you give an article on this subject in some near future issue of your magazine?

Yours truly,
ROBERT E. WISE.

Why go to a physician when ill? Why seek the advice of an attorney when perplexed about legal questions? The average layman will quickly admit he needs expert counsel in these matters but he seems confused or indifferent when the question comes up of employing competent advice for his building. So long as he can find somebody to draw him a set of plans he seems not to worry about the fellow's professional standing, his training, his experience or personal integrity. Mr. Client is getting his plans for a few hundred dollars. Possibly less. It had not occurred to him that if he paid a little more, say six or ten per cent of the total cost of the project, he would get something else besides the plans and specifications. The big question of architecture never entered his mind. In his uneducated state he assumed that all plans represented Good Architecture.

Admitting then that a competent architect will design a building possessed of architectural merit, what else does the client get for his money? How about a confidential adviser? Surely the layman needs one if he is going to build, just as he needs a medical adviser if he would build up his broken body. First, he may need advice in regard to the lot he plans to buy and the kind of building to be built, its size and cost. If it is to be a home the architect will study his client and familiarize himself with his tastes and requirements so that the house may express properly his ideals and individuality.

Further information to which the client is entitled for paying an architect his fee is advice as to financing, types of construction materials to be used and those to be avoided. Sketches of the building are usually furnished first and upon approval working drawings and specifications are prepared, submitted to contractors for bids and contracts awarded. It is typical for the client to favor the lowest bidder and here again the expert advice of the architect is valuable. If one contractor is a great deal lower in his bid than the others, he usually has been able to underbid them by a wide margin in one of two ways: by cutting his profit, or by skimping the work. Something for nothing is likely to work in reverse. The client will pay something and get nothing. After the contracts are let and the work is started, much of the architect's service, so far as office work is concerned, is completed, but in a sense his usefulness is just beginning. Up to this time it has been largely academic, a matter of paper and pencil and stored-up knowledge. Now comes another test—his ability to handle men and to keep the work running smoothly. He must see that each contractor does his work properly, that supplies are delivered on time, that the work is not delayed nor hindered, that there is no substituting of inferior materials for those specified; that all bills are paid and finally that the owner gets his money's worth. The architect is far from a luxury. He's an economy.

SQUEEZING OUT THE WASTE

That the movement for elimination of seldom-used varieties of everyday commodities is growing in scope and is saving millions of dollars to American commerce and industry, as manufacturers recognize the benefits from this simplification process, is shown in a report to Secretary of Commerce Hoover by William A. Durgin, head of the Division of Simplified Practice of the Department of Commerce.

During the last quarter of 1923, the report shows, ten industries, with the cooperation of the division, put into effect eliminations and simplifications covering a vast number of varieties of their products; the effect being to bring down manufacturing costs, and to benefit distributors and consumers as well. In addition to these, several other industries are on the way to accomplish similar savings.

In the industries tied up with building construction, Mr. Durgin points out simplifications affected metal laths, building bricks, range boilers and hollow building tile. Surveys of the brick industry showed 39 sizes of rough face brick and 36 sizes of smooth face brick. The conference of manufacturers, builders, and architects adopted one size and style in each case, eliminating 73 numbers previously made. In dealing with hollow building tile the varieties of sizes and weights were reduced from 36 to 19; while in the case of metal laths, sizes and weights were reduced from 125 to 24, covering both flat and rib type laths.

Developing the simplification process with regard to range boilers, 13 varieties were retained out of a list of 130 which had been revealed in the survey of this industry.

The field of public works also benefited by simplified practice, Mr. Durgin shows, both as to vitrified paving brick and asphalt for road and paving work. The survey of the paving brick industry had shown 66 varieties, and through the cooperation of the Division the industry has cut this number to six varieties.

The confusion due to huge varieties of certain articles for the home has been lessened, the report indicates. Where there had been more than 200 various dimensions of beds, springs and mattresses, the Division was able to bring about an agreement of one length and four widths as standards for this group.

American Institute of Architects

(ORGANIZED 1857)

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Two New Residences

Architect Joseph L. Stewart is completing plans for a large country residence to be built in Woodside, San Mateo county, for the F. A. Zane Estate. The house will be wood frame and stucco with copper shingle roof. The estimated cost is $40,000. Another pretentious house being designed by Mr. Stewart, whose offices are in the Claus Spreckels building, San Francisco, is for Mr. J. P. Livingston. This home will be erected on the corner of San Buena Ventura and St. Francis boulevard, San Francisco, and will cost $35,000.

With the Architects

Building Reports and Personal Mention of Interest to the Profession

A. I. A. Convention Echoes

NEWS dispatches in the San Francisco papers reported the re-election of Mr. W. B. Faville as president of the American Institute of Architects and as the Pacific Coast delegates had not returned at the time of going to press, the announcement appeared in this magazine for June. It appears the newspapers were in error and that Mr. D. Everett Waid was elected president with 192 votes, having no competitor.

There were present at the Washington convention, two hundred and three delegates. There were two candidates for the first vice presidency. Mr. Ellis F. Lawrence of the Oregon Chapter was nominated. The vote was close, being 104 for Mr. Lawrence, and 98 for Mr. Edwin Bergstrom of Los Angeles. Either candidate would make a good first vice president, and those who know Mr. Lawrence and what he stands for are gratified at his election. Mr. Abram Garfield of Cleveland was elected second vice-president; Mr. Edwin H. Brown was re-elected secretary; Mr. Wm. B. Ittner, treasurer; Mr. Nat G. Walker, director of the fourth district; Mr. Wm. J. Sayward, director of the seventh district, and Mr. Sylvain Schnaittacher, director of the ninth district.

This year's convention lacked the glamor of the one last year because there was no function equal to the pageant, in fact instead of honoring one of the distinguished men of the profession the delegates stood in silence to the memory of Henry Bacon, whom the convention honored with a medal last year, and to the memory of two others, Louis H. Sullivan and Bertram Grosvenor Goodhue. These are great names in the history of American Architecture and their passing should call attention to their work and to its significance in American architectural progress.

An interesting discussion followed a query from a member from Kansas in regard to reduction of fee in competitions where outsiders are cutting. The idea was advanced that when single efforts will no longer avail members should "hunt in packs" and to illustrate this Mr. Myron Hunt of Los Angeles explained the inside working of the organization of the Allied Architects of Los Angeles. This organization seems to have the confidence of the public, is obtaining the bulk of the public work in its region and its members are prospering.

It was voted that the time for qualifying of associates be extended to five years instead of the present three years, and that dues shall be left as at present.

Y. M. C. A. Buildings

The Y. M. C. A. is to have three new buildings in San Francisco in the near future. Preliminary plans have already been made by the International Building Bureau of the Association, 347 Madison avenue, New York. Architects Meyer & Johnson of San Francisco, have been appointed resident architects of a four-story building to be known as the Chinese Branch and to be erected on Sacramento street, between Stockton street and Grant avenue. Appointment of local architects for an eight-story army and navy branch to be built on the Embarcadero, between Mission and Howard streets, will be made shortly. The Association also contemplates building a ten-story hotel for members on Turk street, near Leavenworth.

Messrs. Crim & Murdock Busy

Plans have been prepared by Architects William H. Crim, Jr. and Hamilton Murdock, 425 Kearny street, San Francisco, for a two-story concrete store, office and apartment building to be erected on the north side of Market street, through to Oak, for Mr. Wm. McDairmed, and for a Spanish type residence in Palo Alto for Mr. Frank W. Erlin, of the Coast Rock & Gravel Company. The same architects have recently awarded a contract for a $40,000 building on Franklin street, between 14th and 15th streets, Oakland, for the East Bay Title Insurance Company.

Tennis Club to Build

The California Lawn Tennis club has had preliminary plans prepared by Architect Nathaniel Blaisdell of San Francisco for a new club house, grandstand, bleechers and tennis court.

Personal

Architect Edward L. Mayberry has moved his office from the Pacific Electric building to suite 905, Transportation building, Los Angeles.

Architect Hugh R. Davies, senior member of the partnership of Davies & Baume, 1010 Farmers and Merchants Bank building, Long Beach, has been appointed a member of the Long Beach city planning commission to fill the vacancy caused by the resignation of Architect W. Horace Austin.

Architect John D. Atkinson has opened offices at 626 W. M. Garland building, Ninth and Spring streets, Los Angeles.

Architect H. D. Bounetheau has moved his offices from Title Insurance building to suite 626 W. M. Garland building, Ninth and Spring streets, Los Angeles.

Architect H. W. Higbie of San Jose announces the removal of his offices from the Porter building to the Higbie Studios, 518 South Second street.

Architect W. P. Major announces the removal of his office from 1140 Merchants National Bank building to 2211 E. 38th street, Los Angeles.

Portland Architects and Builders Organize

Architects and builders of Portland, Ore., have formed an organization known as the Northwest Associated Contractors and Architects, which has for its general purpose the establishment of a uniform standard of quality in construction, elimination of disastrous competition, a reduction in the volume fo "ram-shackle" construction and devising a more economical method of home financing.

The association, working through a committee organization of contractors and architects, plans to prepare and submit to the coming legislature in Oregon a license bill somewhat similiar to the one recently enacted in Oregon by the real estate men for the protection of their business.

Warehouse Planned

Construction of a $250,000 distributing warehouse in San Francisco will be started shortly by the John A. Roebling & Sons Company in the south of Market section. The company has purchased a site with frontages of 200 feet on Sixteenth and Seventeenth streets and 400 feet on De Haro and Carolina streets and will dispose of its present five-story steel and concrete building at 646 Folsom street. The new structure, plans for which are being prepared by the company's engineers in Trenton, N. J., will be one-story in height and of steel and concrete construction.

To Hold Big Exposition

Those interested in architecture will be interested in the Exposition of Inventions to be held December 8th to 13th inclusive, in the famous Engineering Societies building, New York City. The American Institute of the City of New York is handling this display through its Inventors' Section, with behind it an experience of ninety-six years in fostering and portraying American industrial life.

A feature of the Exposition will be exhibits from the leading American industries showing developments of various machines, utilities and processing methods. In all fields the ingenuity of the inventor and the part he has played in the progress of America will be emphasized.

In this display of American inventions the American Institute will be continuing with a new emphasis almost a century's encouragement of inventors and introduction of their works to the public. Among inventions now used throughout the world that were first displayed to the public at earlier All-American fairs of the Institute are the Morse telegraph, the Hoe lightening printing press, the McCormick reaper, the Howe sewing machine, the Bell telephone, the Colt revolver, the Francis metallic life boat, and many others.

Passing of Architect E. C. Hemmings

Mr. E. C. Hemmings, one of the best known architects in Northern and Central California, died at Sacramento on June 12th, following a comparatively short illness. Mr. Hemmings was not only prominent in his profession but was active in the club and social life of Sacramento. At the time of his death he was associated with Mr. Leonard F. Starks in the preparation of plans for several large buildings in Sacramento, including the new home of the Sacramento Elks, additions to the Hotel Sacramento and the Nathan mercantile building. Mr. Hemmings designed the Chamber of Commerce building in Sacramento and a number of other structures of equal prominence. He received his early training in Chicago and for a time practiced his profession in San Francisco. In 1907 he went to Sacramento where for several years he was associated with Mr. George C. Sellon. A year ago a partnership was formed with Mr. Starks under the firm name of Hemmings & Starks. Mr. Hemmings was forty-six years of age. He was a member of the Scottish Rite Masons, Elks Lodge, Sutter Club, Lions Club and Sacramento Chamber of Commerce.

Safety First

Realizing that the unprecedented building activity in San Francisco has created conditions with which the regular state and municipal safety officials cannot cope; the Industrial Association of San Francisco has instituted a safety service which will be carried on along with its other various activities.

A well known local safety engineer was retained by the Association several months ago, and has since been engaged in making a safety survey of the community and in instructing the association's corps of inspectors in all lines of safety work. These inspectors have charted and mapped the entire city; and are now going regularly from job to job to check up and report on such matters as flimsy and inferior scaffolding, absence of temporary floors in buildings under construction, inadequate railings, exposed belts, gears, flywheels, sprockets and other such machinery, unguarded signal cords and floor openings, and various other of the hazards which are attached to the building industry.

Whenever any one of these hazardous conditions is found, the inspector reports it at once to the job contractor and to the Industrial Association; and re-inspection of the job is made within forty-eight hours. Usually the contractor is found ready and willing to remedy the condition at once; but if he should prove recalcitrant, the matter is immediately turned over to the state or municipal safety enforcement authorities in whom is lodged power to hold hearings, conduct investigations and assess punishment.

Monthly Meeting

The monthly business meeting of Southern California Chapter of the American Institute of Architects was held Tuesday evening, July 8, at the Uplifters' Ranch, Santa Monica Canyon. A barbecued dinner was served. The meeting was given over principally to a program of entertainment.

Berkeley Theatre

Plans are being completed by Architects James T. Narbett and R. F. de Sano, associated, of Richmond, for a two-story brick store and theatre to be erected on Bancroft Way, near Telegraph avenue, Berkeley, for Mr. Frank Atkins.

To Double Size of Plant

Montgomery - Ward Company have started construction of a second unit to their Oakland plant which will consist of an eight-story reinforced concrete building equal to the size of the present building.

Simplified Lines Now in Effect

The first of July proved an important date for a number of industries, according to Ray M. Hudson, chief of the Division of Simplified Practice, Department of Commerce. On that day simplification became effective in a number of industries which, with the co-operation of the Division, have discovered an excess of varieties of their products, and in which the producing, distributing and consuming groups have agreed that fewer sizes, styles or other variations would serve the purpose previously served by many items.

Two very important industries are affected by their previous decisions in conferences held under the auspices of the Division. One is the lumber industry, which, after spending many months in considering simplification and standardization, reached an agreement some time ago which will result in a reduction of nearly 60 per cent of the number of finished yard lumber items and will make effective certain standards for the protection of both producer and consumer. It is predicted by lumber experts that this action will be of appreciable value in the effort to check the present annual waste in the lumber industry which is estimated at $250,000,000 a year. The other big industry which applies its simplification agreement is the paper industry, which makes effective certain basic sizes, as well as weights.

Still other industries whose simplification programs are now in effect are the forged tool group, range boiler group, and blackboard and roofing slate, in each of which sweeping reductions have been made.

Accepts New Position

Mr. Max E. Cook, for a number of years Farmstead Engineer for the State Land Settlement Board of California, with headquarters at Delhi, Merced county, is now in charge of the Architectural Service Department of the California Redwood Association. Mr. Cook will be remembered in San Francisco as at one time associated with Architect Eugene Sawyer. Mr. Cook's offices in Los Angeles are in the Metropolitan building, 315 West Fifth street.

San Jose Architects Busy

Architects Binder & Curtis of San Jose, besides completing plans for an eight-story Class A store, office and club building for the Commercial club of that city, have made plans for a Catholic Women's Center to cost $145,000, a new office building for the Pacific Gas & Electric Company to cost $100,000 and extensive remodeling of fifteen stores at Second and San Fernando streets. This property is owned by F. A. Gummer of Stockton.

With the Engineers

American Association of Engineers Meet in San Francisco

THE tenth annual national convention of the American Association of Engineers was held in San Francisco June 11th to 13th inclusive, and was largely attended by delegates from all parts of the United States. Part of the convention was devoted to reports of various officers and committees and the discussion of engineering topics of interest to members. Some of the subjects given special consideration by committees were: "Engineering Education and Classification of Engineering Schools," "Insurance," "Land Reclamation and Settlement," "Political Policies," "Public Improvements and Tax Rate," "Salaries of Engineers in Teaching Service," "Service and Salaries of Engineers in Public Service," "Services and Fees of Practicing Engineers." Among those delivering addresses was Mr. C. J. Ulrich, temporary field secretary. The last day of the convention was devoted to sightseeing and entertainment with the annual dinner and installation of officers and directors in the evening. Saturday June 14th, many of the members of the committee were entertained by the city of Oakland. One of the most interesting subjects which came before the members and received both formal and informal discussion was the question of the engineer's license law. Mr. J. B. Lippincott of Los Angeles was asked by the president of the Association to give an answer to two questions, namely, "What is the Greatest Need of the Association To-day?" and "How Shall That Need Be Met?" His answer in full follows:

"I believe the greatest need is to advance the general standing of the engineer in the community. The engineering profession seems to lack cohesion and confidence in asserting itself adequately. I think this is partly because anyone who wishes to go into the engineering business in many of our states, including California, does so without any restraint or necessary qualifications. We see the continual process of young men starting in as chainmen, working up to positions as instrumentmen on some piece of work, and thereafter asserting themselves as qualified engineers to undertake almost any line of construction that may be available. We have had, of course, many very eminent engineers develop in this way. In other words, their natural ability and force of character have carried them through. There are a great many other examples, however, of uneducated and really incompetent men who are generally classified in the community as engineers and who tend to lower the general standard of the profession both by competition at low wages and also by unduly assuming responsibilities. This situation perhaps can be best met by the engineers' license law which the association advocates and I think should continue to advocate.

"In my judgment, the technical education of the engineering profession is very narrow, and while it qualifies a man to perform technical details, it utterly fails to qualify him to take his stand in the community at large as a leader. The law, medicine and the clergy are quite distinct in this regard. Many of our law and medical schools now require a liberal university education prior to years of specializing on the profession.

"In California we see our technical commissions, such as our Railroad Commission, Harbor Commission, Highway Commission and the like, filled with men who are not engineers. The position is even taken that the engineer is particularly disqualified for occupying such executive positions. I think this is very largely due to the fact that the engineer does not seem to be able or to have the inclination to stand out prominently before the public as a leader in public affairs. As a rule he does not enter into public discussions in the newspapers or on the platform.

"I think that our association should advocate the broadening of the training of the engineer in our universities so that he is competent to compete, for instance, with the legal profession in matters of leadership of this sort. I think the association also should urge and insist that its members not only prepare technical papers for meetings with engineers, but that their members should more fully enter into public life. The association should use all its influence towards the obtaining of appointments for engineers on executive boards. The government of our modern cities is very largely based on the administration of engineering problems.

"As a matter of course our association should co-operate in every possible way in getting the salaries of engineering employees in the public service advanced to the basis of a living wage, and also assist the worthy members in getting positions. The pay of the rank and file of our engineering profession is pitifully small.

"In answering your question No. 1 I have also answered your question No. 2, which is "How shall that need be met?"

Very truly yours,
J. B. LIPPINCOTT."

Assailing the policy of the Department of the Interior in its elimination of engineers from administrative positions in the United States Reclamation Service, the convention passed a condemnatory resolution by contending that the substitution of chief clerks in these positions casts a reflection on the ability of engineers and will tend toward inefficiency.

As a remedy to the situation, another resolution was passed, urging upon congress the establishment of a department of public works, the head of which to be a member of the president's cabinet and a member of the engineering profession. To this department it was urged that all non-military engineering work should be referred.

A resolution was passed naming Dr. F. H. Newell of Washington, former Commissioner of the Reclamation Service and

past president of the American Association of Engineers, to represent the Association at the Pan American Convention at Lima, Peru, in November.

The special committee which has conducted a national contest for the best essay on "The Ideal Member" submitted its report and read several praiseworthy essays upon the convention floor.

The convention was unanimously in favor of smaller chapters and a resolution was adopted making provision for the formation of small chapters with a Class B rating, within the jurisdiction of our larger chapters. The proponents of the resolution claim that by this arrangement the working organization of the chapter will be materially expanded and serve as a check for clique rule which has wrecked many of the larger chapters.

By a resolution the National Board of Directors was directed to entertain proposals and enter into an agreement with an insurance company for group insurance for members who care to avail themselves of the opportunity. The carrying of life insurance is not compulsory upon the membership, but those who desire it will find sufficient saving in the insurance rates to enable them to carry insurance and pay their dues in the association still leaving a saving compared with regular life insurance rates.

The 1925 convention will be held in Orlando, Florida.

* * * *

Meeting of American Society of Engineers

MORE than 400 members attended the fifty-fourth annual convention of the American Society of Civil Engineers at Pasadena last month. President C. E. Grunsky of San Francisco delivered his annual address at the opening session Wednesday morning. Thursday was given over to discussion of Colorado river problems. A paper written by Col. Wm. Kelly, chief engineer of the Federal power commission, read by Maj. Howard S. Bennion in the absence of Col. Kelly, was the feature of this session.

President Grunsky's address was a review of the engineering progress and achievements of the west and California in particular. He said the first evidences of engineering in California are to be found in the missions founded by Junipero Serra, which were built to endure as well as to be architecturally attractive, and in the irrigation canals constructed under the supervision of the mission priests. Discovery of gold brought up engineering problems in the development of water for mining. This involved the carrying of water across great expanses and remarkable work was done by some of the engineers who pioneered in this field.

A famous accomplishment was the pumping of water out of the noted Comstock mines at Nevada City, Nev., which was done under the direction of George W. Dickey, a Scotchman, who built the battleship Oregon. California engineers led the world in construction of water wheels for development of power. They also made great strides in the development of dredges which were first used extensively in the Sacramento and San Joaquin rivers, where channels were opened and extensive areas were reclaimed for agriculture. Engineers of this state also introduced revolutionary processes in the manufacture of gas from crude oil.

Forty years ago F. E. Brown astonished the engineering profession by building a granite arch dam in Bear Valley in the San Bernardino mountains, which was in service until replaced a few years ago by a mutiple arch concrete structure. California engineers, Mr. Grunsky said, have made many notable contributions to the science of dam construction.

The first street cars to be operated by cable appeared in 1878 on Clay street in San Francisco, and this method of transportation was copied all over the world until electric transportation systems took its place.

One of the comparatively recent achievements of California engineers has been in the transmission of electrical power over high voltage lines. This was first done successfully in this state and California still leads in this field of electrical engineeriing. Mr. Grunsky referred to several pioneer efforts in power transmission, including the successful attempt in San Antonio canyon, near Claremont, in 1891.

At a meeting of the board of direction previous to the convention, Cincinnati, O., was selected as the place for the annual convention in 1925.

The board reaffirmed its opposition to the present system of putting all nonmilitary engineering projects of the United States under the control of the engineers' corps of the Army.

Announcement was made of the gift to the American Society by John R. Freeman of Providence, R. I., of a fund of $25,000 to create a trust "for the purpose of encouraging engineering investigation with a view to giving special recognition and encouragement to the young engineer." Similar gifts were made by Mr. Freeman to the American Society of Mechanical Engineers and to the Boston Society of Civil Engineers.

Field of the Contractor

To Stabilize Contracting

THE Northern California Contractors' Association has submitted to its members for discussion the plan of Fred G. Simmons, former State Engineer of Oklahoma, to stabilize contracting. Mr. Simmons, who is now manager of the Association, outlines his plan as follows:

"There is a very serious question connected with the present method of handling contracts for public and other large construction work. It is a question which, up to the present, has not been accorded the mutual consideration to which it is due. The indications of a lamentable lack of thoroughness are almost daily evident and result in loss and financial failure to many contractors and construction firms in many instances which call for bonding companies to make good poorly handled contracts and as a corollary in poorly executed work, or a lot of trouble to public officials who have to handle these misconceived 'jobs.'

"To one who has followed the construction and contracting game for many years it has become increasingly apparent that there is a crying need of a 'clearing house' organization which should not act as an adjunct of any one of the interests involved, but as a true clearing place for all sides, particularly the three—contractors, bonding concerns and public interest, as represented by state and municipal officials. There might also well be included the corporations or individuals who have occasion to let contracts for building and other construction work.

"The writer, who has had long experience as a public official, both state and municipal, and who has also been chief engineer of large construction companies, has necessarily been in constant association with representatives of bonding companies. He has been impressed with the fact that many totally irresponsible concerns and individuals, bidding on important work, have been able to furnish surety bonds when it was really a comparatively easy matter to have known that the chance of the work being finished under the contract was slight, unless the surety company were forced to finish it under the bond. It would be a thankless task to try to 'dig up' and explain why this is so. It would be far more helpful and constructive to suggest a remedy, or remedies.

"Does not such a solution lie, as indicated above, in the formation of a central organization under able executive management which could thoroughly cover the territory for which it was intended? Such an organization should be of a high order and, like Caesar's wife, above suspicion. It should be equally responsible to all of the interests involved, contractors, surety companies and public.

"Properly conceived and honorably organized and administered, it could render absolutely invaluable service by surveying most painstakingly all proposed work or contracts contemplated within its territory and could make known to its patrons all technical, physical, financial and other necessary data, so that all might be able to act on exact and reliable information.

"The contractor could be given a resume of methods of payment, intricate technical requirements, local conditions to be met and even a general idea of the officials and their peculiarities under which the work would proceed. In fact, the scope of information that could be briefed for the contractors' benefit could be as thorough as might be desired.

"The bonding companies could be furnished reliable information as to the conditions and requirements of the work, the real records, achievements and standing of the contractors submitting bids, and such other facts as might help them to determine the desirability of the job.

"Public officials and others could be saved much trouble and heart burning once such an organization as that suggested was established in the full confidence of all concerned. It is the writer's idea that such result is capable of realization. Bank clearing houses and other similar institutions are operating in various lines of endeavor with the full confidence of their patrons and are doing such valuable work that no one would think of operating without them. Why not then something of parallel character for the great enterprise of construction contracting?

"Many hundreds of millions of dollars yearly are flowing through this channel and yet much of its method and procedure is unorganized, slipshod and inaccurate. This need not be so. The banking business and many others have organizations that are daily striving to

make their affairs more nearly scientific; why not the construction contracting business?

"It is the writer's belief that the present failure to get very far along this particular line is due to the fact that the several interests involved have never been properly correlated. Contractors' associations have not given much thought to the interests of the surety companies and have rather thought that the public was an adversary to be combated. If all three of these interests could be brought together in one association which could be depended on to act fairly with and for all, a wonderful stride forward would have been taken.

"The best minds in all three elements of such a combination are really convinced that stability and integrity are more to be desired than the old, careless, 'every one for himself' method, and now entertain a real desire to put this most important branch of the country's interests on an exact and responsible basis.

"The writer believes that if this suggestion is given serious consideration by contractors' associations, bonding companies, public officials and others, it can be made to develop into a concrete result of the utmost value to all. Surely it is deserving of serious study."

Zinc Roofs Under Test

Tests of corrugated zinc roofing are now under way at the Bureau of Standards of the Department of Commerce for the purpose of determinig the loads that can safely be carried by this material. Unlike most roofing materials zinc fails not by breaking but by bending slowly under load, the material taking a permanent set. It is therefore not considered desirable where heavy loads must be born continuously, unless it is well supported. But where the normal load is light, as it is apt to be in the tropics, zinc roofing may prove more durable than galvanized steel, as the latter fails rapidly from corrosion in such climates.

The test made on the roofing consists in loading the corrugated sheet with sand, the sheet being supported on a frame-work representing the roof purlins. The load is left in place for a month or more and the deflection is measured each day.

Convention of Highway Officials

California has been awarded the 1924 convention of the American Association of State Highway Officials which will convene in San Francisco November 17th to 20th. The convention will bring to the Pacific Coast highway officials of practically every state in the Union, prominent highway engineers, as well as leading officials of the United States Bureau of Public Roads, and others active in the highway movement throughout the country.

Theater Switchboards

"Theater Switchboards", (C. 1702) is the title of a new publication just released by the Westinghouse Electric and Manufacturing Company describing their line of theater lighting-control equipment and announcing their multi-preset board. The multi-preset feature is a new Westinghouse development and is attracting widespread attention, especially in theatrical circles.

The improvements which have characterized the dramatic art during the last two centuries have been, not so much in the art of stage impersonation, as in the mechanical and accessory means of enhancing the value of a play. Of these accessories, lighting effects are of the most vital importance to the success of a theatrical production.

During the world war not only did theater building practically quadruple, but the average seating capacity increased from 2,000 to 3,500 persons. Simultaneously with this growth the lighting requirements increased correspondingly, making the already difficult problem of lighting-control still more difficult.

Up until the present time the best board which has ever been produced could be used to set up the lighting effects for one scene in advance, and one only. As a result, the stage electrician works feverishly between every scene, opening and closing switches with the ever-present possibility of closing the wrong switch.

The multi-preset board, featured in this circular, is the Westinghouse solution of the problems introduced under the old method of control. With this board all the lighting effects for every scene of a theatrical production may be set up in advance and remain undisturbed for the entire run of the production. These effects may be worked out previous to the first performance, the proper switches thrown, and the cabinet doors closed and locked, completely protecting them from molestation.

The lighting for any scene is then produced by merely throwing a lever or pushing a button (master control switch) depending on the type of board. They may be made large enough to control the complicated lighting effects of the most elaborate productions.

Two multi-preset installations have already been made and are at present in operation. One of these is in the Earle Theater in Philadelphia, and the other is in Scottish Rite Cathedral, San Antonio, Texas.

AIR AN ECONOMIC FACTOR IN BUILDING

What Size Hoist?

(Copyright 1924 by W. F. SCHAPHORST, M. E.)

NOW that compressed air is being used so freely air hoists are coming more and more into prominence. Air is rapidly becoming a very important economy factor. There is no medium that is easier to get and use than air because it surrounds all of us all the time. Its initial cost is nothing.

Users inform us that air hoists, particularly those that are suspended from a track, are great time and money savers. With such a hoist one man can lift any weight—any weight that the hoist will lift—thereby saving the time of several other men and besides doing the work more quickly. If any plant has much lifting to do, and if compressed air is available, an air hoist will pay for itself in a very short time.

To assist in selecting air hoists and for determining the capacity and pressure required, the writer has prepared the chart herewith, which eliminates all figuring.

For example, if you have an air hoist 6″ in diameter and an air pressure of 100 pounds per square inch the dotted line drawn across this chart connecting the 6 in column A with the 100 in column C shows in column B that it will lift a trifle over 2500 pounds. Thus, simply connect the known diameter in column A with the known pressure in column C and the intersection through column B gives the capacity in pounds.

On the other hand if it were desired to choose an air hoist having a capacity of 2500 pounds, knowing the air pressure to be 100 pounds per square inch the same dotted line would give a diameter of 6 inches.

In other words, run a straight line through any two known factors and the intersection with the third line gives the answer. Thus, again, the same dotted line would show that if you want a capacity of 2500 pounds and you have an air hoist whose diameter is 6″ a pressure of 100 pounds per square inch will be needed to produce the desired capacity.

The chart, as will be noted, has a great enough range to take care of any ordinary requirements, the diameters ranging from 2 to 20 inches and the air pressures from 30 to 300 pounds per square inch. The capacities, column B, range all the way from 100 pounds to 80,000 pounds, or 40 tons.

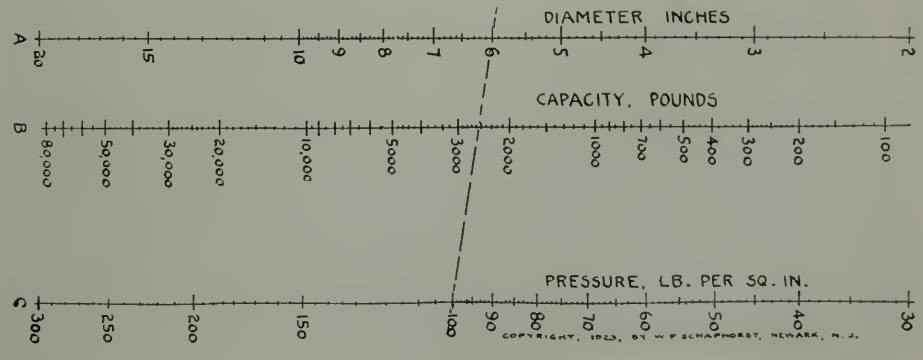


Exhibit of Church Architecture

At the Quadrennial International Conference of the Methodist Episcopal Church held in Springfield, Mass., during the month of May, the Bureau of Architecture of the Methodist Episcopal Church had an exhibit filling one of the rooms of the Municipal Auditorium. This consisted of 14 panels, 36″x48″ in size, several mounted renderings of exteriors, transparencies, professional journals, books on architecture and folders containing blue prints, showing suggested plans in sketch form drawn at 1/16″ scale.

A feature of the exhibit was a panel showing elevation and floor plans of a "Seven Day a Week Church." The floor plans were developed on the departmentalized plan now growing in usage in the educational section of church buildings. Around the margin of the panel were photographs illustrating various activities conducted in such rooms. Ribbons extended from the rooms shown on the floor plans to lists of activities possible in the building.

The Methodist Episcopal Bureau of Architecture is endeavoring to promote throughout its constituency a demand for church equipment adequate for the modern needs, particularly for the requirements of a departmentalized school of religious education in each church plant.

Sprinkler Company Expands

Mr. A. B. Gould, who was for a number of years president of one of the large eastern sprinkler companies, has purchased an interest in the Independent Automatic Sprinkler Company, bringing with him a complete line of the very latest approved sprinkler devices as well as new capital, which will enable the Independent Automatic Sprinkler Company to operate on a much larger basis than heretofore. Mr. Gould will act in the capacity of president, dividing his time between San Francisco and Los Angeles.

The value and importance of automatic sprinkler protection is becoming more generally known and appreciated in California, also a better realization of the fearful loss of life and property in schools, hospitals and other public buildings throughout the country in recent years, and the great saving in insurance which comes to the owner who protects his property by installing automatic sprinklers.

These facts, together with the exceptional climatic conditions influenced Mr. Gould in severing his eastern connections that he might make California his future home.

Portland Cement Association

For the first time in five years the Portland Cement Association met on the Pacific Coast. In 1919 the spring meeting was held in San Francisco. This year Los Angeles was the meeting place. The sessions were held at the Los Angeles Biltmore, May 19 to 21 inclusive. Forty-eight member companies were represented by about 140 registrants.

As usual, the sessions were given over to discussions of technical subjects of interest to cement manufacturers, committee meetings and the general business session.

Stucco Company To Have New Plant

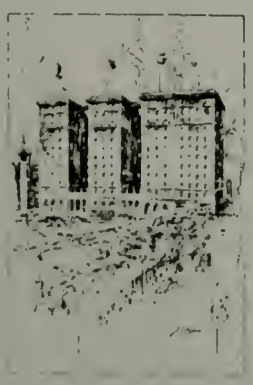
Construction work is under way at the plant of the Alhambra Stucco Company, 430 Eleventh street, San Francisco, for a building to accommodate double the present equipment. From the grinding mills the materials will be elevated to storage bins directly over the mixing floor on which will be installed labor saving devices. The packing floor will be directly under the mixers and when completed the plant will be practically automatic.

The strictly Portland cement product made by the company appears to have met with instant favor with the building trades and in all confidence that the highest grade materials for exterior finishing will meet with a permanent and increasing market in the Bay region and adiacent territory, a plant is being developed that will have capacity, combined with economy of operation.

The personnel of the Alhambra Stucco Company is unusually strong in its combination. Mr. George W. Simmie of Manilla, P. I., formerly head of the Luzon Stevedore Company, Mr. T. W. Simmie, of the T. W. Simmie Coal Co., San Francisco, Mr. George A. Duke, well known by building material dealers in all the western states, and Mr. E. H. Peterson, who has had a wide range of experience in merchandising on the west coast and mid-western states. The factory is in charge of Mr. U. C. Zoccola, formerly of Johannesburg, South Africa, and later associated with Lloyd's statistical department on South American industries.

Plant extension into Oakland is planned in the very near future, of which territory Mr. D. A. Sherwood has supervision.

"Since I bought a car I don't have to walk to the bank to make my deposits." "Ah, you ride there?" ventured a friend. "No, I don't make any."



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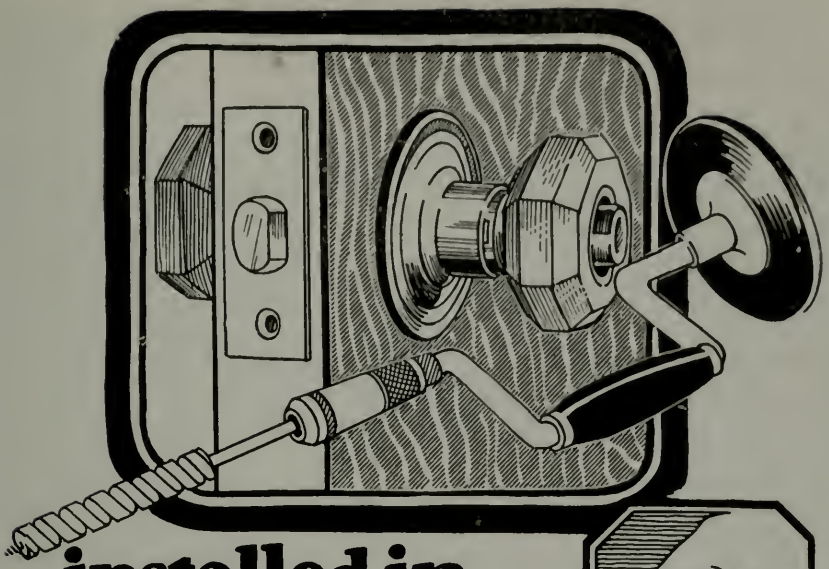

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W. L. ("Uncle Billy") Rhoades, manager of the agricultural department of the Paraffine Companies, Inc., well known in San Francisco, recalls the days when "men on the road" numbered among their selling experiences frequent encounters with other "men on the road" of less respectability. Rhoades was on an early-day stage containing $100,000 which was marked for plunder. The plot failed and one of the robbers was killed.

But it was Rhoades' ability to have conquered semi-blindness and succeeded in life, that is particularly interesting. For years after the accident to his eyes, which almost completely ruined his sight, Rhoades struggled against terrific odds. Oculists—some of the most famous in the nation—treated his eyes for long periods, without success. In fact, each told him he would become entirely blind in less than eight years.

Rhoades, who is 52 years old, seemed to be facing a losing battle at the age of 20, but Fate in the person of a pretty Texas girl, who possessed all the fighting qualities of the Texan, came to his rescue and supplied him with eyes. Rhoades was married to her in Sacramento. She refused to let any obstacle stand in the way of her husband's success. For 21 years Mrs. Rhoades has been her husband's eyes, reading to him night after night, and assisting him to gain knowledge and broaden his vision of life.

Rhoades was the first salesman to introduce prepared roofing on the Pacific Coast. He is the best known salesman in the west, having spent nearly 30 years traveling through California, Nevada, Oregon, Washington, Montana, Idaho, Utah, Texas, British Columbia, Alaska and the Northwestern part of Canada from the Great Lakes. For 17 years Rhoades was the manager of the Seattle office of the Paraffine Companies, Inc. His aggregate sales during his career, he estimates, run into millions of dollars.

Following a severe nervous breakdown, due to overwork in the Seattle office, Rhoades went to Honolulu, at his own request, to further develop the business of the Paraffine Companies, Inc. Although suffering from semi-blindness and having to be led about by his wife, Rhoades began investigating the mulching process. He visited the fields and studied the different kinds of experiments with paper to stimulate the growth of pineapples. He induced the Paraffine Companies, Inc. to develop the process, and today is responsible for the phenomenal success of Pabco mulching paper, or thermogen, which has opened up one of the greatest avenues of commerce for a great company and which will prove of benefit to agriculturists in every part of the United States.

"The fellow who can dig up a smile when everything goes dead wrong, often helps the other fellow over some hard bumps," says Rhoades. "It has been my good fortune to have had two or three of my friends tell me lately that the cheerfulness of disposition which I have retained despite my affliction has proven of great service to them in helping them over their own troubles."

Westinghouse Revises Booklet of Wiring Tables and Illumination Data

The third edition of "Handy Wiring Tables and Illuminating Data", has been recently revised and published by the Westinghouse Electric and Manufacturing Company. This 52-page booklet contains detailed directions for accurately laying out the wiring for an industrial or commercial lighting system, and, for this reason, is of particular interest to architects, builders, electricians and electrical dealers. An interesting feature of the publication is a table of the present standards of desirable illumination for various classes of service, giving the range of foot-candles most desirable for illumination in practically every branch of industry where artificial light is used.

Practical electrical definitions at the beginning of the book are followed by wiring formulae and tables, together with illumination classifications. A complete table of foot-candle values for lamps of different wattage in areas of different size is included. Various types of commercial luminaires manufactured by the Westinghouse Company are described and pictured.

Medusa Officials Visit Coast

Mr. Geo. L. Brown, traveling representative of the Sandusky Cement Company of Cleveland, O., was a recent visitor to the San Francisco Builders' Exchange. Mr. Brown was accompanied by Messrs. J. B. John, president, and E. J. McGuire, secretary-treasurer of the company, all three having attended the conference of the Portland Cement Association in Los Angeles.

Reception room of The Erickson Company, New York. The artistic distinction of the room is enhanced by the floor of Gold-Seal Trendlite Tile, in a harmonizing pattern of buff and fawn gray tiles.

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Science in the Use of Nails

The old proverb "a stitch in time saves nine" applies as pointedly to nails as to needles, says Mr. John F. Keeley, packing expert of the Department of Commerce, who is conducting, in co-operation with shipping industries, an exhaustive investigation of means of prevention of loss of goods in transit. That a timely nail is worth more than its weight in gold has been proved by tests of packing cases at the United States Forest Products Laboratory which show that the majority of failures of ordinary boxes is due not to the lumber of which the box is made but to improper nailing. In many cases a better box can be constructed with thinner material by the use of a few more nails in the right places, making a material saving in initial cost of packing as well as subsequent saving through less loss in the box car and on the concrete platform.

In making a packiing case the nailer must use his own head as well as the nail's, declares Mr. Keeley. The proper nailing of boxes demands the use of the right kind of nails, the right size and the right number. The size and thickness of nails are determined by species of wood and thickness of boards. The woods commonly used for box-making purposes have been divided by the Forest Products Laboratory into four classes according to their strength and their ability to take and hold nails with white pine leading group one, southern yellow pine leading group 2. red gum leading group 3 and hard maple leading group 4. The number and size of nails needed to make strong boxes out of the various woods of different thicknesses have been reduced to regular rules and charted. Charts by which anybody who can read may know just what nails to use and how many and where for every common kind of box wood have been prepared by the Commerce Department and may be had by anybody who will write to the department and ask for it. This chart pasted up in the shipping room and used means money for the user.

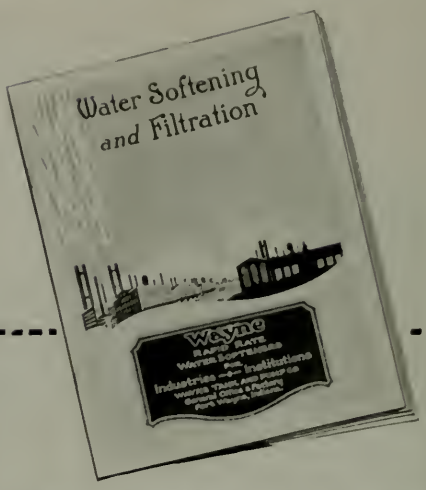
"Spare the nail and spoil the box" is Mr. Keeley's motto.

Painting Contract

A. Quandt & Son, 374 Guerrero street, San Francisco, have been awarded the painting contract on the new animal hospital under construction in San Francisco, from plans by Architect George Washington Smith of Santa Barbara. Lindgren-Swinerton, Inc., are the general contractors.

Architects Move

Architects Dean and Dean of Sacramento announce the removal of their offices from the city library building to the California State Life building, Tenth and Clay streets.



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The ARCHITECT & ENGINEER

AUGUST 1924

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Published Monthly by
THE ARCHITECT and ENGINEER Inc.
626-627 Foxcroft Building - San Francisco
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California Memorial Stadium, The University of California, Berkeley. John Galen Howard, Architect. Dedicated on Nov. 23, 1923. First used for the Stanford-California football game of Nov. 24, 1923. Seating capacity 72,000. Length of playing field, major axis, 459½ feet; on minor axis, 267½ feet. General dimensions, major axis, 759½ feet; on minor axis, 567½ feet. About three-quarters of the seating structure is supported on earth, the remainder on a concrete superstructure which is carried on a wall 68 feet high. The seats are of wood and the surface beneath them, both concrete and earth, is covered with asphaltic macadam. There are two large tunnels, one at each end of the major axis, and four minor tunnels along the southwest side. Data furnished by Mr. Howard. Photograph by Gabriel Moulin.

THE
ARCHITECT
AND
ENGINEER

AUGUST
1924

VOL. LXXVIII
No. 2

Outdoor Theatres and Stadiums in the West*

By EMERSON KNIGHT, Landscape Architect

GATHERING places in the open remind us of early worship in forests, in the hollows of hills, on the plains and in caves along the coasts of seas. In such situations we enter into close contact with nature; with pungent ground, fresh air, the wide sky, bird song and the noble company of trees. Trees, to which man attributed spiritual qualities through many ages, are wells of inspiration as we contemplate them in mass or in detail. They seem like noble companions and true friends.

Seeking shelter and warmth under roofs has become habit through centuries because in many climates rain may fall during any month of the year and long cold seasons also demand such protection. Man has long been accustomed to congregating in churches, halls, auditoriums, theatres and opera houses all designed to protect from the weather, for purposes of worship, instruction or amusement; also for music and the drama, both so richly inspirational. But let us pause to think how often during a year we of western America enter buildings to listen to an able speaker, groups of actors, musicians and singers through sheer hunger for the feasts they have to offer us, yet we pass in reluctantly because we see and feel keenly the beauty of the outward day or night. Thus we have dual impulses.

Our Pacific states all have climates contributing many days and nights in every year which can be enjoyed to the full out of doors. We have already a number of good stadiums, Greek theatres and smaller outdoor play stages which are used in a somewhat limited fashion. But

Editor's Note—Mr. Knight has conducted the profession of landscape architecture in San Francisco for the past six years. His field of work has included the Bay region and has extended from Clear Lake on the north to Monterey on the south. He has cultivated a kinship with all the creative arts and those who give them vitality. Enthusiasm, idealism and taste are combined in an endeavor to achieve gardens of charm, dignity, fitness and invitation. He has given much study and thought to this special phase of landscape work, the creation of the outdoor theatre.

*Copyrighted 1924 by Emerson Knight, 9 Geary street, San Francisco.

we have room for many more both private and public ones which would be conducive to better health and greater happiness. The hill towns and cities of the San Francisco Bay region or metropolitan area, towns of the Santa Cruz mountains, of the Monterey Peninsula, of Los Angeles, Santa Barbara and other counties with rolling topography; also forested environs of cities and towns of Oregon and Washington all offer many sheltered sites for open air theatres which could be constructed and maintained at moderate cost.

The spirit of the west is already intensely alive in reviving the theatres of ancient Greece and Rome, of Pompeii and Sicily and Southern France, adapting them to the needs of a newer land whose historic background and climatic moods link it subtly and closely with the shores of the Mediterranean, the cradle of intellectual beauty. Keeping pace with this trend toward the classic, the natural hollows of hills and the charming retreats of the forest and stream, also nooks in private estates and gardens are being transformed into natural amphitheatres and stages, insuring an intimate contact with nature and her primal vigor. Finally the stadium, originally intended for football and general athletics, has evolved from these limited functions into a community center, the scene of pageants, concerts, the drama, dancing, ceremonials and school affairs. Citizenship of higher type, of broader usefulness and sympathy is being built through all these vital forces at work in the skyroofed theatre. Just how universal this impulse has become is proven by the large number and varied kinds of open air theatres and stadiums which have sprung into being in the west—all within a span of twenty-five years.

Come, let us hold forth in the open and unfold the mind and heart and receive food for the soul in the skydomed theatre. We will sit upon the ground or upon seats of wood or stone and while we listen and observe, the sun will filter its warmth into our beings by day and the stars and moon offer their benediction by night. We will inhale the salt winds of the sea or the spicy odors of the woods. Fancy will lead us back into the realms of childhood's perennial joy, to the fascinating scenes of glowing youth and into the romantic lanes of love where sunshine and shadow thrilled with alternate blessings and pain. The glorious thought is that all great souls will live over only their best, because all of the influences of the open are pure and sweet. Our souls will find balm and be conscious of quiet growth.

Consider, for example, a small hilltown with a treegrown canyon sheltered from the prevailing winds. Sometimes it is only necessary to remove a few trees to express the form of the theatre or to reveal distant vistas from the slope planned for the seats; a moderate amount of grading may follow, possibly the construction of a stage and seats, plantings to function as screens, backgrounds and groundcovers and finally an effective lighting scheme. The principles and requirements are simple, easily comprehended. Yet the selection of the site and its development should not be attempted without the counsel of a competent landscape designer because his judgment and skill combined with his vision will tend to a finished work which can give the same gratifying quiet pleasure which an owner feels when an able architect has evolved his home.

When a large seating capacity is justified through community needs, the Greek theatre, Roman coliseum or stadium should probably be constructed, involving problems to be solved by the architect, engineer and

landscape architect working in close co-operation. Modern custom also demands providing suitable convenient space for parking a great many cars. Big cities may have use and furnish sites for a number of such ample theatres. The Greek theatre at Berkeley, the stadiums at Berkeley and Stanford, the stadium at Los Angeles and other similar structures in our Pacific Coast states all prove how the people appreciate and enjoy the drama, concerts, opera; and also all athletic sports in good weather directly under the sky.

This reminds us that the Greeks took great care of the body and approached nearer to physical perfection probably than any other race in history; the Romans were famed for hardiness and surpassing endurance. It is significant that they witnessed and listened to all forms of entertainment in the open theatre for many centuries. Breathing pure air most of the time must have been a factor in keeping them fit.

The fascinating technical problems of design raised by the development of open air theatres cannot be discussed within the limits of this article; except to indicate one which has a particularly wide field of suggestion. The employment of different levels appropriately grouped for the enactment of major and minor episodes in a drama or pageant presents tremendous possibilities. The type of theatre in which the background is a hillside with a fairly rapid rise is the ideal one for this purpose. One of the most successful outdoor theatres of this kind in California is that at Bohemian Grove in the heart of the redwoods, where there are two major stages on different levels successively back of the orchestra pit. These are followed by a series of smaller ones in rising sequence so that they group in pyramidal form, culminating in a sort of shrine far above the spectator. The Los Gatos Pageant is staged in three levels or terraces with an environment of native oaks. The open air stage on the private estate of Mr. Max M. Cohn, near Los Gatos is richly endowed with potentialities along this line and the setting is of such sylvan loveliness that it can scarcely be surpassed. The action at the Mt. Tamalpais Theatre has taken place at varying elevations to conform to the needs of the plays but without the construction of formal levels or stages. This preserved the naturalistic effect desired. In this instance the audience is seated above, instead of below these stage levels.

Night is the time when the great majority of people are free to relax and gain the full enjoyment of the outdoor theatre. There is no hot sun and the hills and forests exhale their balm and fragrance while shadows soften all things. It is essential then to seriously consider the aspect of the open air theatre at night and to see that the system of lighting is carefully planned and executed. Audiences seated in the hollows of hills with distant views or in forested retreats may have a feast for the eyes and the soul when the woodland is lighted by those who have mastered the art of stage illumination, because they do much in creating pictures of fairy loveliness, of wonder and delight. This is a subject so much neglected that it is desired to give due emphasis to the importance of properly lighting the large public theatre and the smaller private play stage. One of our best authorities on outdoor theatres and ablest producers of the drama in the open, has stated that

in the Greek Theatre of Berkeley alone, the expenditures for different lighting schemes during its history have equalled many times the cost of one initially planned and permanently installed system.

When an open air theatre is used at regular intervals for inspiring conceptions of drama and music, when a policy is established of producing only works of merit in an effective way that stamps the whole as a work of art, then the place becomes a living thing, a vital rejuvenating force in the lives of great and humble souls alike; it becomes a personal part of and a joy to the community. Let our resolve be to not degrade the character and name of such a sacred place in the hearts of the people through the production of poor and worthless works of any kind.

When good drama and music are thus rendered out of doors, the same benefits that are experienced for all indoor performances still obtain for the auditor with added advantages. The imagination of the actor is stimulated and his senses quickened when there is a direct background of nature's moods and the subtlety of the elements. The listener immediately feels the effect of all that stirs the actor because he is breathing the same freedom which strengthens the possibilities for interpretation; for the expression of the one and the impression upon the other. The life giving odors of the forest bring refreshment to all, adding zest to our feelings and playing with all the other noble influences upon our emotions. We gain a clearer perspective, a better sense of values. When proper judgment and skill are employed, acoustics should be of the best and we become edified, stilled, reverential during the tense renderings of pathos or tragedy and in contrast are relaxed thoroughly when mirth reigns and the woods ring with peals and echoes of laughter.

The outdoor theatre in its ideal sense belongs to the spirit of this age. Through the spoken word, the rendition of music, through song and the dance it can contribute to mental, physical and spiritual growth. If it is healthful to exercise, work, play and sleep in the open, it should be even more beneficial to have our finer sensibilities unfolded in the same favorable atmosphere. The potentialities of the outdoor theatre are so great that every community should endeavor to develop and maintain at least one such magnetic center for the people as a means of portrayal of the public thought and feeling.

Let the owners of beautiful private estates stop to consider whether they may not have a canyon or wooded spot with rich potentialities for an open theatre whose development might result in happiness to many of their friends and increased satisfaction in their own properties and their own more rounded lives. Let architects and the citizens of towns favored with excellent open air theatre sites bestir themselves and through sound energy achieve that which, far from being impossible, might pay a rich dividend of pleasure and unite all the people of the community in a closer bond of brotherhood than perhaps they had ever dreamed of before.

The west is yet young, virile, hopeful and crude, but fine impulses are continually seeking expression. If these high tendencies are fostered

Memorial Open Air Theatre, High School group, Santa Monica, California. Allison & Allison, Architects. Built in 1921. Seats 3000. Construction of concrete and brick. Enriched with a pool before the stage. Airplane view. Photograph loaned thru courtesy of Allison and Allison.

A hedge encircles the outer rim of the theatre with the feeling of monotone. While the low height seems justified opposite the stage, on the main axis between the stage and the school entrance—it should be more interesting to have groups or masses of trees rising on either side of the two diagonal walks which feed the upper tiers of amphitheatre seats, thereby heightening the nobility of the major axis, and rendering more interesting the scene from the stage.

and encouraged, we will evolve and nobly develop a culture of finer stamp that will express the innate breadth, strength and freedom of the west and reflect the beneficent influences of the elements. Let the open air theatre be one of the great moulding forces for good with us all, a portal leading into a new and more wonderful existence, until we instinctively aim toward the ideal beauty in the public and personal works we undertake, not for material gain but for the pure pleasure of doing things as well and as loftily as they can possibly be done. Let us work for fundamentally sound structures, using materials indiginous to each locality, and take joy in good lines and color, using decoration with discretion and only where it will best illuminate function. Thus aspiring to the truest goal of beauty we may perchance achieve such an architectural expression of our better selves as shall in future time be regarded a new classic order of the occident.

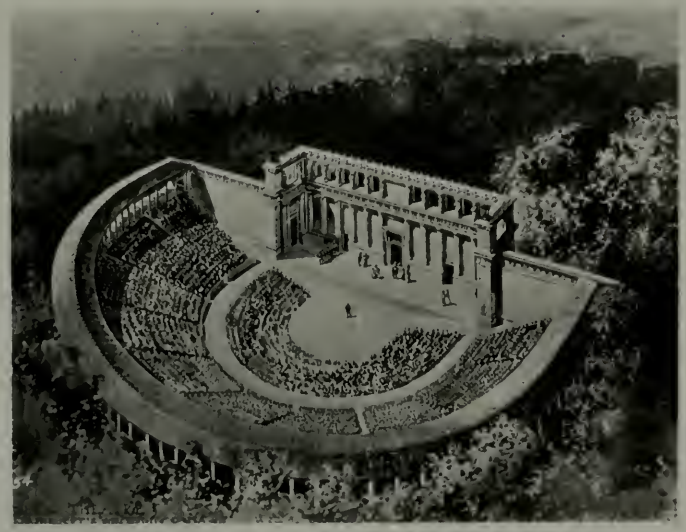
Author's notes—For further information regarding the better known outdoor theatres of this country, the reader is referred to the following:

"Outdoor Theaters" by Frank A. Waugh, Richard G. Badger, 1917.

"The Open-Air Theatre" by Sheldon Cheney, Mitchell Kennerley, 1918.

Also to Mr. Samuel J. Hume, authority on and producer of drama and pageants, San Francisco.

Mr. Garnet C. Holme, Los Angeles.—Playwright and producer of dramas.



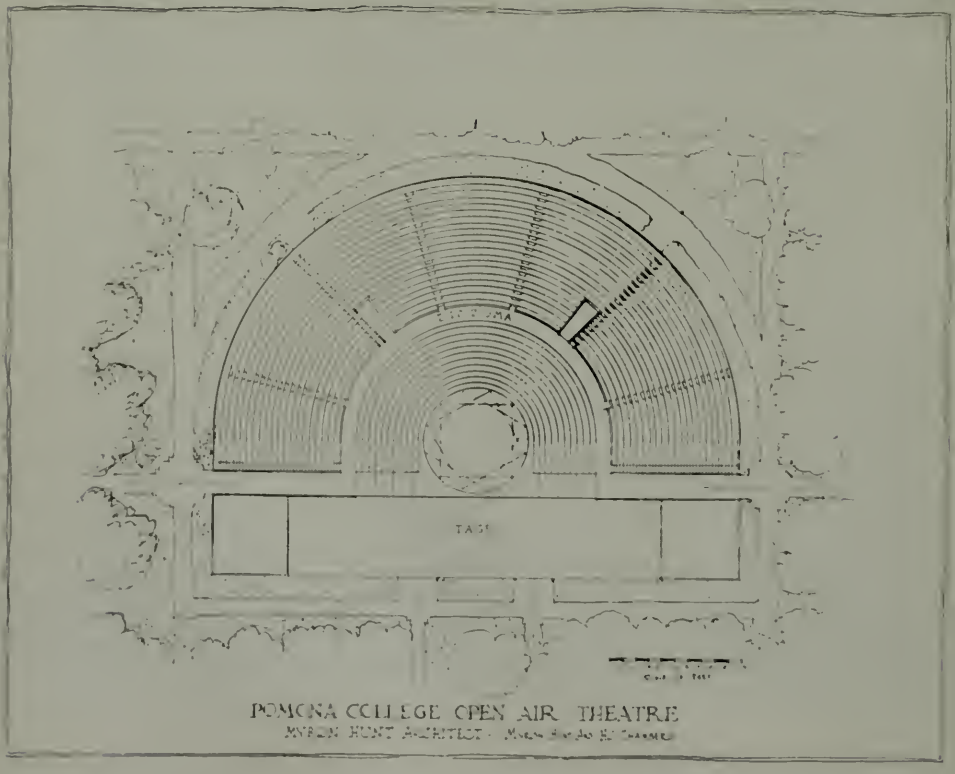
The Hearst Greek Theatre on the Campus of The University of California at Berkeley. John Galen Howard, Architect. Erected in 1903 at a cost of about $45,000. Seating capacity normally 8000 but has seated about 10,000 on special occasions. The auditorium, or theatre proper, is semicircular in form, 254 feet in diameter. The stage is 133 feet wide and 28 feet deep, surrounded on three sides by a wall 42 feet high. The theatre has been used for musical and dramatic activities, for student rallies and as a place of assembly for University ceremonies such as Charter Day and Commencement. Data furnished by Mr. Howard.

During a recent performance of Shakespeare's "Twelfth Night" produced here under the direction of Samuel J. Hume, the stage and orchestra circle, the latter set temporarily with turf, were used alternately or simultaneously with splendid effect—enlivening the movement and intensifying the interest. This was in line with the early Greek tradition which underwent a formative period in the Sixth Century B. C. The forms and customs became crystallized in the great Fifth Century, B. C., when Aeschylus lived and wrote. Then, while the actors used the stage, the chorus in the orchestra circle had a very definite and distinct part or function in the performance thru singing, chanting, recitative and dancing. While they gave response to the action on the stage above, they seemed also to serve in an intermediate manner, interpreting the scenes in some fashion for the audience.

The smaller photograph shown on this page is from the architect's sketch and indicates how the theatre is to appear when the plans are fully perfected.

The ISIS, a Greek Theatre and Doric Stoa at the International Theosophical Headquarters, Point Loma, California. Constructed by Mme. Katherine Tingley in 1901. The first open-air Greek Theatre in the U. S. A. Seating capacity, 2000. Located at the head of a rugged arroyo leading to the Pacific Ocean half a mile away. A magnificent panorama from the seats is intensified by the manner in which the Temple is thrown in pure classic relief against the surf of the sea. The accoustics are remarkably good. Photograph copyright by Katherine Tingley. Loaned thru courtesy of Mr. Charles K. Field.

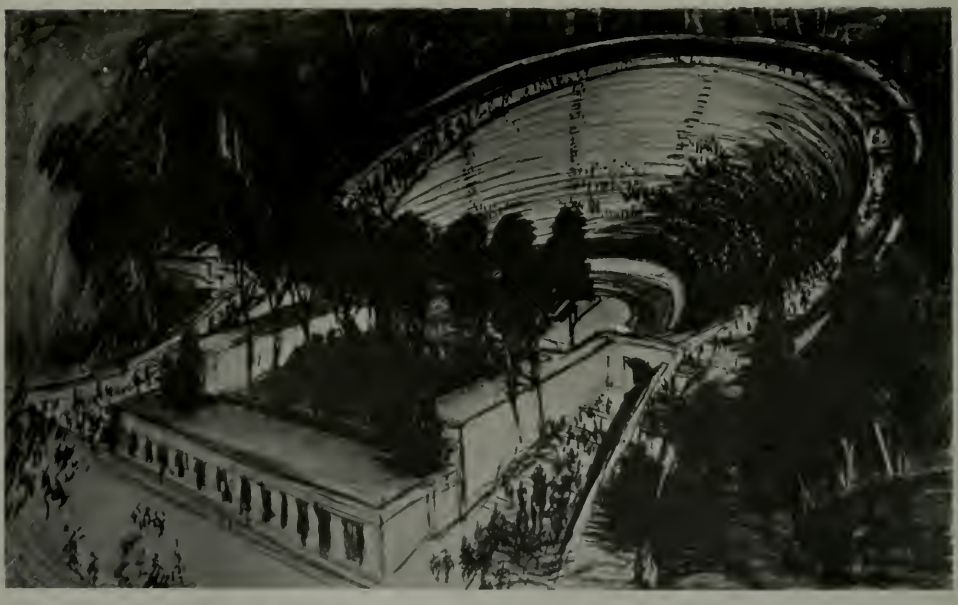
The ISIS, a Greek Theatre and Doric temple at the International Theosophical Headquarters, Point Loma, California.
View from the head of the arroyo, showing both the temple and the amphitheatre. The path in the foreground winds up the canyon, allowing the players to reach the temple unseen by the audience.
To quote Madam Tingley, "The drama is like a magnet drawing all classes within the circle of its influence, and a Teacher could have no more potent means of touching the hearts of men for the Drama is always symbolic, if not of truth, then of error."
Photograph, courtesy of International Theosophical Headquarters.



POMONA COLLEGE OPEN AIR THEATRE
MYRON HUNT ARCHITECT

Greek Theatre at Pomona College, California. Myron Hunt, Architect. Built in 1913. Seating capacity, 4000 to 5000. Permanent construction has been carried across the front of the stage, also the orchestra complete, and the first three seat risers back of the diazone. The remainder of the construction shown is temporary and does not show permanent lines. This theatre is especially interesting on account of its setting and the designers made every effort to take advantage of the natural stage formed by the oaks. In other words, the permanent scheme includes only a minimum of architecture flanking the stage. See also the plan, showing completed arrangement of the theatre. Photograph and data furnished by Mr. Myron Hunt.

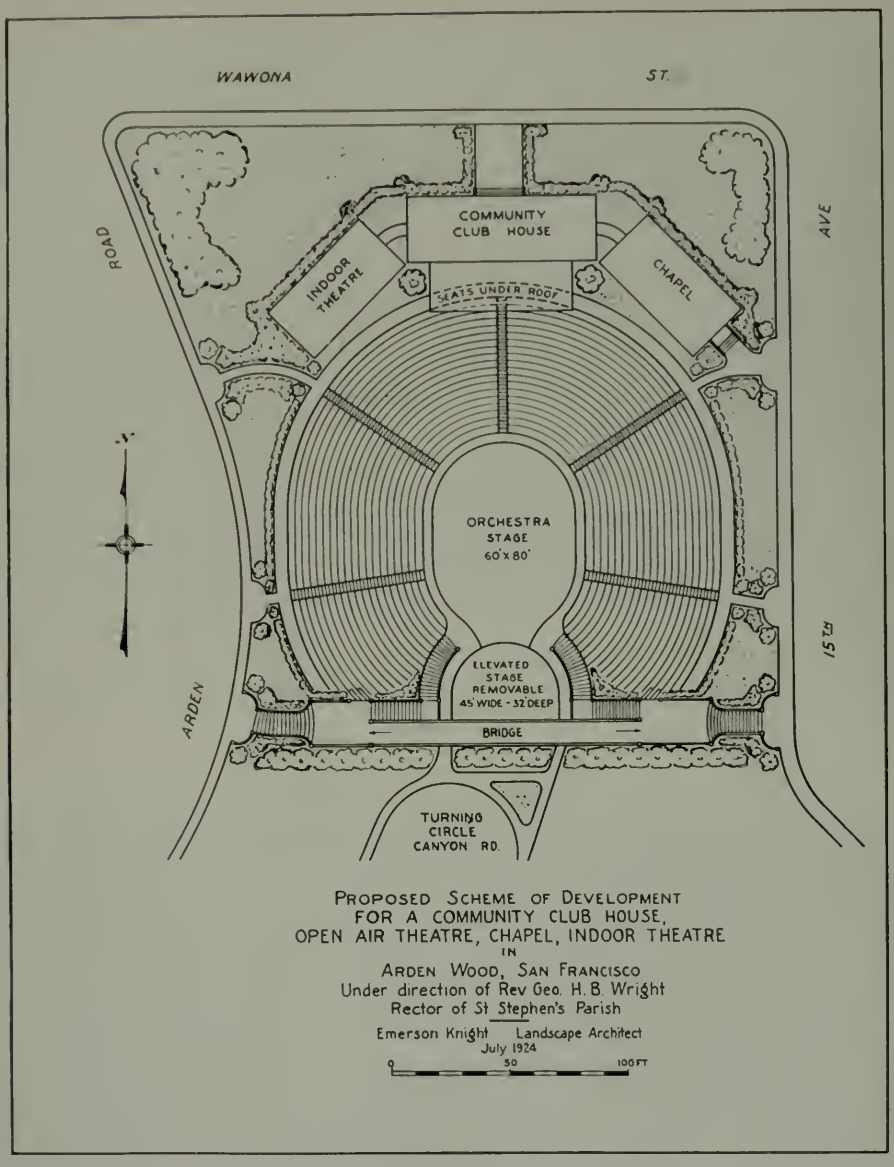
Greek Theatre at Genesha Park, Pomona, California. Erected in 1916. Its effect would be greatly heightened by background plantings which are undoubtedly planned.
Photograph thru courtesy of Pomona Chamber of Commerce.



Greek Theatre now under construction for Occidental College, Eagle Rock, Los Angeles, California. Myron Hunt and H. C. Chambers, Architects. Will have a seating capacity of approximately 5000.
Photograph of the architect's sketch and data furnished by Mr. Hunt.

Open Air Theatre at Bakersfield, California. Built in 1908 by Mr. Truxton Beale in connection with the University Expansion Scheme, and erected in the Park which he presented to the City of Bakersfield. Lewis P. Hobart, Architect. The theatre is built in the form of an amphitheatre and seats approximately 250 people. The stage and wings are Pompeiian in design and very simple. The side walls of the amphitheatre and floor of the theatre are of reinforced concrete thruout. This is enlivened with a fountain in the center. Photograph of the original perspective drawing, courtesy of Mr. Hobart.

Scheme of development of The Pilgrimage Play presenting Life of the Christ, at Hollywood, California. Designed for Mrs. Christine Wetherill Stevenson. Bernard R. Maybeck, Architect. The stage in three levels, procenium arch (on cranes), auditorium and organ, as shown on the right, are complete and have been used annually for several seasons. The viaduct, forming an enclosure for the rear of the auditorium and also creating an overhead promenade, is for future development. Plans were also completed for the dressing rooms, dining room and rehearsal stage, as shown on the left, but construction was not completed due to the death of Mrs. Stevenson. The photograph is of the architect's color sketch and loaned by Mr. Maybeck.



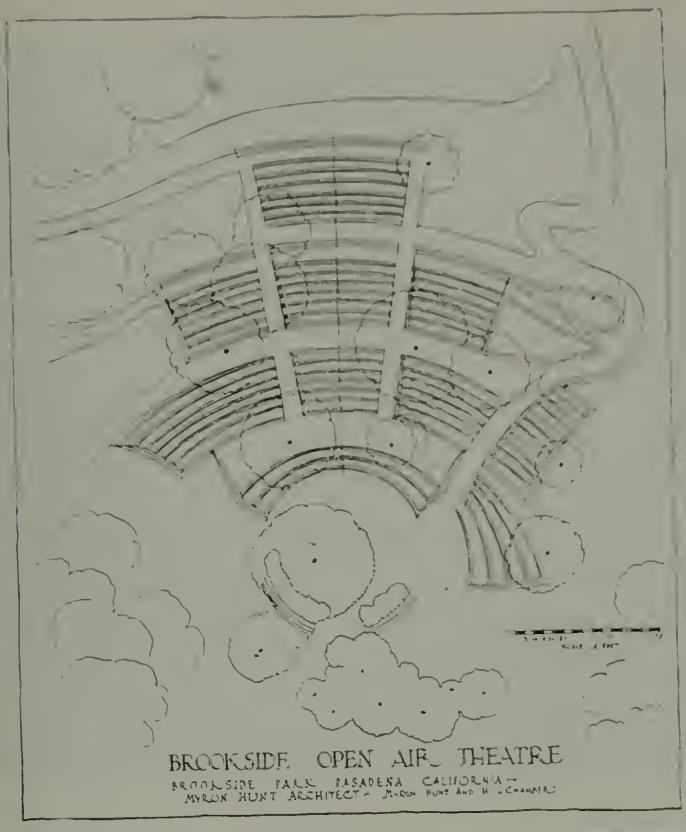
Proposed Scheme of Development for a Community Club House, Open Air Theatre, Chapel and Indoor Theatre, at Arden Wood, San Francisco. Under direction of Rev. Geo. H. B. Wright, Rector of St. Stephen's Parish. Emerson Knight, Landscape Architect. Approximate seating capacity of open air theatre, 2600. If elevated stage only is used, about 600 more persons may be seated in the Orchestra Circle. The subdivision was originally planned with a turning circle at the north end of the canyon road. This has been converted in plan into an orchestra circle and a new turning circle is created just south of the bridge, so that those who enter from the Canyon Road may filter thru the passages between the stage and stairs, under the bridge. Suitable for community singing, concerts, opera, dancing, plays, pageants, and rallies.

The site is a natural canyon which will be closed on the north by the fill of Wawona, the cross street. A natural amphitheatre will then be formed commanding a scene of great beauty, a grove of eucalypti. A warm protected spot with good accoustics. Photograph is from a drawing by the author.

The Palace of Fine Arts, San Francisco. Bernard R. Maybeck, Architect. Students of beauty dancing on the shore of the lagoon and enframed by the noble collonade. The Palace of Fine Arts was built to house works of painting and sculpture and constituted the fitting terminal or superb culmination of the major axis of the Panama Pacific International Exposition of 1915. Its inspired architecture and environment of living plant forms, masterfully combined, produced a profound effect, stirring the minds and hearts of all visitors to the Exposition. The photograph offers another most striking suggestion, namely that of an outdoor stage with such an idealistic setting that the author assumes poetic license as it were, in embracing it in this article. That this noble structure has been an inspiration to many architects is beyond question and its entire environment offers a rich field for the designer of the open-air theatre.
Photograph, courtesy of Californians Incorporated.

The Outdoor Organ in Balboa Park, San Diego. The only one of its kind existing. Built by John D. Spreckle's of San Diego and his brother Adolph, of San Francisco, for the Panama-California Exposition of 1915-16 and afterwards presented to the City of San Diego. Ever since maintained by these spirited citizens, free concerts being given daily thruout the year. Serves the double purpose of an outdoor instrument and an open-air theatre. Used for community singing, celebrations and observances. The stage is large enough to accommodate 100 or more singers. Seating capacity 2500 with standing room adjacent for thousands more.
Photograph, courtesy of San Diego-California Club.

The Open-Air Theatre of Fresno, California, named La France's. It invites the attention of civic clubs to the improvement which could be contributed by a better design.
Photograph, courtesy of the Fresno Chamber of Commerce.



Community Theatre at Brookside Park, Pasadena. Myron Hunt, Architect. Seating capacity, 5000. Advantage was taken here of a natural site and the entire work was done with a surveyor and architect (Mr. Hunt in person) and a lot of Mexican laborers. The plan was first carefully drawn in the office from an accurate survey, showing the location of all trees and following the grades. Mr. Hunt then had his plan staked out on the ground, locating the seats where the oaks would not interfere with their view of the stage, until the seat plan assumed a very interesting arrangement which is shown on the plan. Photograph loaned and data furnished by Mr. Myron Hunt.

The Mountain Theatre on the slope of Mt. Tamalpais, Marin County, California. 2000 feet above sea level. A natural amphitheatre on a rock ribbed slope, framed by redwoods, oaks and madrones and commanding a superb vista of the Bay and Islands of San Francisco and distant ranges of hills and mountains. Founded in 1913 since which plays have been annually in May. The site of the theatre was presented by the Hon. William Kent to the Mountain Play Association and is to be held forever for the purpose of the yearly festival. The gift was made as a memorial to Sidney B. Cushing. Photo loaned thru courtesy of Mr. R. F. O'Rourke, President of The Mountain Play Association.

"The Mountain Play is yours. You who gem the mountain's side with ten thousand smiles have made it Californin's Maytime festival. We play not for you but with you." Dan W. Totheroh.

*** The rocky spot used for a stage, small in scale, lacks in dignity and focusing power. A level terrace, buttressed by rude boulders and planted along the back into a screen of native shrubbery or small trees high enough to silhouette the forms of the actors against the green, would arrest the attention more securely on the plot and relieve the eyes. The distant scene could then serve to inspire between acts, a communion with nature instead of an orchestra.

Photograph by Lothers and Young.

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The Hollywood Bowl, at Hollywood, California. The Bowl is a natural outdoor theatre on property consisting of about 67 acres and is operated on a non-profit basis. It has at the present time approximately 20,000 seats with the capacity of about double that number. It is the home of The Hollywood Symphony Orchestra which gives forty concerts during the year. Photograph, courtesy of Mr. Harry Barratt, of The Hollywood Chamber of Commerce. Photograph shows people assembled at the Easter Services, 1924.

The stage is shown with an artificial temporary background screen of shrubbery. The automobiles parked on either hand are unduly prominent and detract from an otherwise pleasing naturalistic vista. It would seem that by means of a steep cut below the site of the cross, the road could be further removed from the audience and provide ample space between the road and the rear of the stage for a plantation of eucalpti or conifers, thus forming a screen for the cars and providing a background, like organ pipes for the winds, to enframe the stage and quietly arrest the attention.

Open Air Stage in Faculty Glade on the campus of The University of California in Berkeley. The Partheneia is produced here as an annual festival by the students of the University. The anatomical vigor and grace of the old live oaks serve to create an entrancing picture. Photograph, courtesy of Californians Incorporated.

The FOREST THEATRE, Carmel, California. Designed by the founder, Herbert Heron, in 1910. The theatre has been used regularly during the summer months for fifteen years. The stage is 55 feet wide, flanked by two tall pines that form a noble procenium. Situated in a forest of pines native to the region, the Monterey Peninsula. Seating capacity, 750. Photograph, courtesy of Mrs. Valentine Mott Porter, Secretary of The Forest Theater Association and from whose letter is quoted: "In addition to the charm of outdoor performances, which Carmel was quick to recognize, the Forest Theatre represents that other big thing—community spirit and an unconscious democracy."

Open Air Theatre of The Los Gatos Pageant at Los Gatos, California. The scene is from the Pageant of 1923, being a story of the Indians of the Southwest. The spacious stage is composed of three terraces with a richly wooded hillside for a background. Pageants have been produced here annually for the past six years under the direction of Mr. Wilbur Hall.
Photograph, courtesy of Mrs. Lynn L. Lobdell, Secretary of The Los Gatos Chamber of Commerce.

Eucalyptus Theatre in Piedmont Park, Piedmont, California. Naturalistic. Scene is from "Alice in Wonderland." Produced by The Children's Theatre of San Francisco, under the direction of Garnet C. Holme.
Photograph, courtesy of Mrs. D. E. F. Easton.

Open Air Stage on the Campus at Mills College, Oakland, California. Built in 1913. A scene in the Mills College dramatization of the Norse legend, "The Death of Baldur," showing a group of Swedish peasants singing their national anthem in coronation ceremony. Given in May, 1924, in a natural setting on the shore of the lake in the College Campus. Miss Elizabeth R. Stoner, Director, has been in charge of this work for eight years. Photograph by Mr. M. W. Scanlon.

The Scouts' Outdoor Theatre in old Elim Grove at Cazadero Redwoods, in Sonoma County, California. Where San Francisco boys for eighteen years have benefited by their contact with the great out-of-doors unders the giant redwoods, in Camp McCoy of the Y. M. C. A. and the San Francisco Scouts Training Camp. The land is used thru the generosity of the owners, the Montgomery estate. Photograph, courtesy of Mr. Raymond O. Hanson, Scout Executive and taken by W. F. Worden.

Easter Sunrise Annual Pilgrimage to Rubidoux Mountain, near Riverside, California. The mountain is named after Peter Rubidoux who acted as guide to General Kearney, who picked him up at Santa Fe when on the expedition that was to make California part of the United States. Rubidoux' association with the district around Riverside as its first white settler led to the mountain's being named in his memory. The mountain is 1837 feet above the sea and almost of solid granite, its summit crowned with huge boulders. When the road was completed in 1907, Jacob Riis, who was a personal friend of Frank A. Miller, owner of the Mission Inn at Riverside and chief promoter of the Rubidoux Mountain Park, made the dedication speech at the first flag raising. Shortly after, a rough-hewn cross was erected on the highest point of the mountain to commemorate the Mission days and Junipero Serra, founder of the missions. Many notables were present at the ceremony of the raising of the cross. In 1909 the unique Easter Sunrise Pilgrimage was established when President Taft unveiled a tablet in honor of Junipero Serra. Jacob Riis felt that if people saw a sunrise in connection with religious thought, the two things would effect a great spiritual stimulus for the community. Services have continued yearly with sincere simple programs consisting of repeating the Lord's prayer in unison, music, responsive readings and singing. In the year 1915, some 12,000 persons made the pilgrimage. Very great artists have taken part and distinguished speakers. An important communistic event.

The Desert Play of "Tahquitz" is produced annually in a desert canyon at Palm Springs, in the Colorado Desert in November. Tahquitz is the name of the peak on Mt. San Jacinto, meaning in Indian—Evil one. The story is that of Blue-beard, in Indian atmosphere. Written and produced by Garnet C. Holme.

Ramona Bowl, near Hemet, showing Indians in annual Ramona Pageant. A natural amphitheatre in the foothills of the San Jacinto Mountains. The Pageant of 1924 was witnessed by 5000 people. The acoustics are remarkable. Presented by the people of Hemet and San Jacinto in the Ramona Bowl, south of Hemet and under direction of Garnet C. Holme, who also wrote the dramatic version which closely follows the novel by Helen Hunt Jackson. Photograph, courtesy of Hemet-San Jacinto Chamber of Commerce.

Open Air Theatre at Montalco, country estate of Senator James D. Phelan at Saratoga, California. Chas. E. Gottschalk, Architect. Consisting of an architectural stage, a spacious natural amphitheatre covered with a lawn and surrounded by shrubbery which is backed still higher by the native growth on the hill. Built in 1913. Accommodates approximately 2500 when spectators sit on the grass. Many prominent speakers have taken part.
Photograph by Gabriel Moulin.

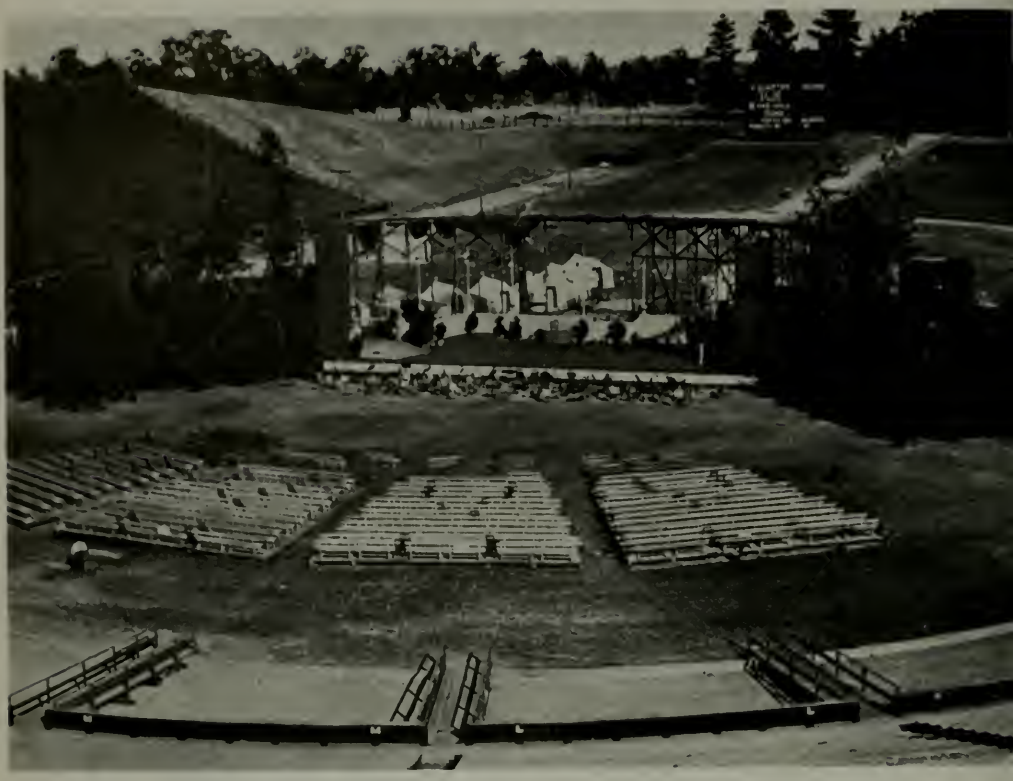
Cypress Theatre, a garden theatre on the estate of Mrs. Henry E. Bothin, at Montecito, California. Inspired by the Italian villa theatre type. One view shows the stage with its clipped hedges for wings; the other shows the half-circle of enclosed "boxes" around the auditorium. These are six in number, each one holding nine people. The auditorium seats 100 spectators. Description quoted from "The Open-air Theatre" by Sheldon Cheney. Photographs from the files of the author.

Outdoor Theatre for Little Brook Farm, Estate of Max M. Cohn, Los Gatos, California. Completed as shown, 1924. Emerson Knight, Landscape Architect. Capacity 250 folding seats. Retaining walls of native rubble stone. The boxwood hedges are designed to effect an enclosure. The audience floor is planned to be covered with turf and the temporary wood stage, oval in form, 20 x 36 feet, is to be replaced with tile in colors to blend with the browns of fallen leaves of the live oaks. The view beyond the stage into a luxuriant growth of oaks, madrones and other native trees is beautiful and stimulates the imagination. Acoustics are good. Protected from winds. Photo by Gabriel Moulin.

The NG TONG TEMPLE, an outdoor theatre at Los Altos, California, John K. Branner, Architect, consisting of a stage backed by a "pai-lo," a sort of roofed pergola and a small "temple" to provide both music and equipment for cooking; and a lawn for the audience. Five residences, two on one side of a creek and three opposite, had their grounds joined under the big willows along the creek. On one side the bank was steep and high, and grown with oaks, laurel and buckeye; on the other, the bank was only about three feet and the adjoining land was practically level, giving a lawn space 200 by 50 feet, framed in trees. The five families concerned removed all signs of property boundaries, and created a commons by the creek, the houses themselves being at quite a distance and well hidden by trees. To these "temple gardens" they gave the name "Ng Tong" roughly translated "five families." Plays, impromptu plays, satires on the five families and their friends in the audience, concerts and social affairs have been given here. The audiences have sometimes numbered 500.
Photograph, courtesy of Mr. Charles K. Field. Description quoted from data furnished by Mr. Field.

Stadium adjoining High School at Tacoma, Washington. Heath and Gove, Architects. Built in 1909 at a cost of $120,000. Seats 32,000 but additional seats are placed on the sloping banks for big occasions and as many as 60,000 have gathered at a time. The acoustics are perfect. The view over the Puget Sound is one of the chief attractions of the stadium. The site was an old gulch and Mr. Heath conceived the idea of sluicing down the sides, filling the bottom and making the stadium. In the City Plan of Tacoma, there is to be a water-front boulevard, now partly completed which is to cross the gulch at the lower open end of the stadium on a bridge, will give the architectural finish.
Data furnished in a letter by Mr. George Gove.

Tournament of Roses Stadium, Pasadena, California. Myron Hunt, Architect. Built 1922. Seating capacity 53,000. Can be enlarged to 75,000. Total width, 490 feet. Total length, 1000 feet. Acreage 15. Entrance to the Stadium is thru twenty tunnels running from ground level to half way up on the sents. Two large tunnels capable of handling autos run from ground level to playing field. The dressing rooms are alongside these larger tunnels. Photograph by Hiller, Pasadena. Photograph, courtesy of Chamber of Commerce and Civic Association, Pasadena.



The Stanford Stadium, designed by Prof. Chas. B. Wing of Stanford University, with the north end converted into an amphitheatre for opera. The stage, cyclorama, all scenery and equipment and the seating arrangement were designed by Maestro Gaetano Merola, impressario and Director of The San Francisco Opera Association, who produced here in the summer of 1922 a remarkable season of grand opera. The acoustics were perfect. To quote Mr. Horace B. Clifton, "It would be safe to say that never before (in California at least) was opera given under more perfect conditions. All nature seemed to gather together her wonderful forces to give us music as we had never heard it before. The air was warm and balmy and filled with the spice of pine and fir and eucalptus. In the sublime stillness of the great out-of-doors the music floated to us as though a magic orchestra of celestial instruments was accompanying a heavenly choir in God's Great Cathedral. The very moon seemed to hang in suspense over the garden scene from Faust and certainly never was that scene more beautiful and more realistic."

The Stanford Stadium, Stanford University, California. Designed by Prof. Chas. B. Wing of Stanford University. Baker & Carpenter of San Francisco, Construction Engineers. Built in 1921. On November 15th of that year, approximately 62,500 people were seated. The main dimensions are approximately as follows:

Depth of playing field below present surface, 23 ft. Height of top of embankment above present slope 36 ft. Length of oval at surface of field, 562 ft. Width of oval, 355 ft. Width of track, 15 ft. Width of straightaway, 30 ft. Distance of nearest seat from center of field—sides, 173 ft.; ends, 285 ft. Distance of highest seat from center of field—sides, 303 ft.; ends, 415 ft. Width of esplanade at top 15 ft. outside, 12 ft. clear. Slope of seats, 8 inches to 13 inches rise in 2 ft. Slope of present bleachers, 14 inches rise in 2 ft. Slope of outside embankment, 2 ft. horizontal to 1 ft. vertical. Seats spaced 2 ft. apart. Width of aisle 4 ft.

Airplane view. Photograph, courtesy of Prof. Everett W. Smith of Stanford University.

Municipal Stadium adjoining the San Diego Senior High School grounds, and within Balboa Park, San Diego, California. Situated in a natural amphitheatre site. Seating capacity, 30,000. Built by the City of San Diego at a cost of $150,000. Besides affording facilities for athletic events of all kinds, this stadium is the scene of pageants, large civic gatherings and school events.
Photograph, courtesy of The San Diego-California Club.

The Los Angeles Stadium in Exposition Park, Los Angeles, California. John and Donald B. Parkinson, Architects. Over 5000 seated in view shown
Photograph, courtesy of Mr. Frank Wiggins, Secretary of Los Angeles Chamber of Commerce.

Stadium on the Campus of The University of Washington, Seattle, Wash. Built in 1920. Seating capacity, 30,000. Staged for "The Wayfarer," a religious pageant drama produced here in 1921 and 1922. The Rev. James E. Crowther is the author. Produced by Montgomery Lynch, who trained 4000 voices for the 1922 pageant. 3000 others participated. The Wayfarer, as produced in Seattle, is a great community effort. People from all walks of life and all races and creeds join in the production. The stadium is a great concrete horseshoe and was built thru efforts of the Associated Students, University of Washington, under the direction of Darwin Meisnest, graduate manager, thru whose courtesy this photograph is shown. An attempt is made to use the stadium the year around by staging Pageants, Horse Shows, Fourth of July Celebrations, Spectacles and open air concerts of all sorts aside from athletic contests.

Stadium at Oregon State Agricultural College, Corvallis, Oregon. A birdseye view of the College Campus. R. R. Clarke, Construction Engineer of Portland, is the Architect. The first unit of the permanent stadium extends the full length of the west side of the gridiron and is constructed of concrete, steel and wood. The seats are of wood, but may later be replaced with concrete. This unit seats in excess of 4000. Will seat 18,000 to 20,000 people when completed. The chief feature of interest about this type of stadium is its cover—a factor of real comfort in a wet climate such as Oregon has in the fall and winter. Photograph, courtesy of Mr. W. A. Jensen, Executive Secretary of Oregon Agricultural College and Mr. Carl L. Koster of Portland.

ENGLISH AND COLONIAL HOMES, SACRAMENTO
DEAN AND DEAN, ARCHITECTS

LOBBY, BROOKDALE LODGE, SANTA CRUZ MOUNTAINS
Horace Cotton, Landscape Architect

Unique Lodge in Santa Cruz Mountains

By FREDERICK JENNINGS

BROOKDALE LODGE, in the Santa Cruz mountains, is an out and out example of architectural and landscape design combined into one harmonious ensemble. In fact it would be hard for either profession to say that the general effect predominates in either field. Without style or period, unless merely being classified as rustic is called a style, it is of distinct enough character to make it interesting and unusual.

To begin with, we might say that it was an old hotel remodeled, but the remodeling was along the lines of a "major operation," with nothing left of the old building but memories and a dead past, too long dead before burial in fact. Thus we might say that Mr. Horace Cotton, the designer, started with a clean slate and with no alibi handy for intrusion by the past with his work.

A bona fide architect probably never would have attempted to put such a set of almost fanatical ideas into execution, but with a landscape prefix to the title of architect and with a man of means and imagination as the owner, Dr. F. K. Camp, ready to undertake anything that sounded like the unusual, the combination collaborating, produced a most unique and interesting structure.

The outstanding feature is the mountain stream running through the dining room. Clear Creek is a beautiful little brooklet that changed its mind some seasons past and moved from its bed and walked over onto the hotel grounds and there cut for itself a new channel. The idea was conceived of straddling this creek with the dining hall and taking advantage of the naturally beautiful fern covered banks, mossy boulders and running water.

With such a setting the building would, of course, be rustic and to add to the rustic effect every detail was magnified in its sylvan feeling. For example, the chandeliers are made of horseshoes suspended

BROOK IN DINING HALL, BROOKDALE LODGE
HORACE COTTON, LANDSCAPE ARCHITECT

DINING HALL, BROOKDALE LODGE, SANTA CRUZ MOUNTAINS
HORACE COTTON, LANDSCAPE ARCHITECT

by log chains. These materials may sound clumsy but with the mass of the building they form an interesting and not inharmonious detail.

The windows are huge affairs, six by fourteen feet, the sash of which are nothing but tanbark oak limbs of four or five inches in diameter, split in two lengthwise, and placed vertically in the window frames. The irregularity of the branches and their bark covering add materially to the rustic effect. The extreme shapes and sizes of plate glass required to fit these odd sized openings demanded great care in the glazing and the Cobbledick-Kibbe Glass Company of San Francisco should be commended for the successful execution of their part of the work.

CORNER OF DINING HALL, BROOKDALE LODGE
Horace Cotton, Landscape Architect

There is nothing to the main part of the structure but four walls and a shake roof. No flooring as one normally conceives of a floor, but merely the creek banks, terraced off and covered with tile laid in cement. The terraces are held in place by huge granite boulders, most of which were found on the spot or a short distance away from their present location. The creek may rise to any level, yet in no way injure the structure as all elements are proof against erosion.

The kitchen is located adjacent to the center of the east side and an important problem has been overcome, that of providing convenient access from the kitchen side of the dining hall to the terraces across the creek. Waiters with their trays are permitted to pass in an efficient and practical manner and to allow for ease of traffic over the creek a bridge was placed at the upper end. As a special feature, a tree

was pulled up by the roots and thrown across the creek just below the bridge, thus damming the water and creating a fall of about five feet.

For a stretch of seventy feet through the middle of the room the creek bed passes in its natural state, six feet wide with banks of ferns and mosses on either side. Many of the original trees found growing along the banks were allowed to remain and now pass up through the room and out the roof, their irregular branching and green leaf masses doing much to soften the lines.

The balance of the scheme is less sensational but along the same rustic lines. The lobby is in a log cabin by itself, some thirty-eight by seventy-two feet. The log walls have been constructed in a some-

LOBBY INTERIOR, BROOKDALE LODGE
Horace Cotton, Landscape Architect

what different manner from the usual method of crossing the logs at the corners. At each corner and at twelve-foot intervals on all sides, logs two feet in diameter have been placed in a vertical position and held rigid by the top plate and the weight of the roof. Curtain walls of smaller logs with windows were then filled in between, thus making a substantial structure.

Interesting features of the lobby are the doors hewn out of redwood logs by hand. They are five feet wide and four inches thick, weighing more than three hundred pounds each. Special ornamental hinges were cut out of scrap boiler plate by an acetylene torch, the hinge part being four feet six inches in length and the butts standing four feet high.

A fire place at the far end, opposite the entrance, is a little out of

the ordinary in that the opening is six feet wide and higher than a man's head. It takes two men to place a log on the fire.

The chandeliers are also of interest. Hanging from the log roof braces are eight horizontal slabs of redwood burl about three feet in diameter. These are highly polished on the under surface and serve as reflectors for the lights. A foot below the burl reflectors are rosettes of lights concealed from beneath by pine cone clusters. Thus the lights are indirect except for occasional rays penetrating the cones. The indirect light conveys the soft tones of the burl surface and produces a mellow glow, but of sufficient intensity for reading.

The lobby is connected with the dining hall by means of a pergola. The pergola passes over the creek just outside of the dining hall in the form of a rustic bridge and permits a view of the dining room through one of the large plate glass windows described above. It leads on to other parts of the grounds where sleeping accommodations are provided. The sleeping quarters at present are but temporary tent houses which will later be discarded when some thirty-two cottages are constructed to take their place.

The swimming pool is located in the westerly portion of the grounds together with a small children's wading pool and a tennis court. There is nothing unusual about these features except that the pool itself is of an interesting design. It is not rectangular as is the usual case, but of a curving outline. It was designed to fit the small open glade found in the forest here and its curving outline softens the white lines of the cement curbing. The interesting feature, however, is the lighting system placed in the bottom of the pool and this novel plan of varicolored lights might be duplicated in the creek bottom and amid the moss-covered bolders in the dining hall. There are seventy-five red, white und blue lights distributed at eight-foot intervals over the floor. Each light is placed below the floor level in a water-tight compartment with a three-quarter-inch plate glass covering. The remarkable feature is that sweating in the conduits and small leakages of water into the light chambers have no influence on the continuous operation. In other pools in this vicinity, with bottom lighting effects, there is constant trouble with water shortcircuiting the lines. An engineer for a large athletic club in San Francisco where similar lighting effects are found, advised strongly against this installation, saying that it would be a constant source of annoyance. The source of trouble being the same in every case, Mr. Cotton figured a way of overcoming the difficulty and his plan has demonstrated that this beautiful underwater feature can be made practical.

Thus the effect of each unit of this hotel is distinctly interesting in itself and unlike to a certain degree anything that has yet been attempted in the way of architecture. Ages of study have given us certain classical styles and details but no type yet devised can blend so harmoniously into the redwood forests of this state as the combined architectural-landscape treatment of Brookdale Lodge.

Since completion in May, the owner estimates that over thirty-five-thousand people have come to Brookdale to see this unusual piece of architecture.

* * * *

Honor Award Architecture

Buildings in Southern California which were given "Honor Awards," by a jury of architects recently, will be illustrated in The Architect and Engineer for September.

A HOUSE ON THE PACIFIC HIGHWAY, NEAR MEDFORD, OREGON

Wooden Pegs Used to Hold Historic Old House Together

THIS lovely old house on the Pacific Highway, five miles south of Medford, Oregon, was begun in 1853 and completed in 1855. It is built of hand-squared logs dove-tailed together, the large timbers being fastened with heavy wooden pegs. According to the old timers the logs were drawn to the site by oxen.

This place was called the Block House by early pioneers and, because of its immense size, 50 x 50, it was used by them as a shelter and protection from the Indians and also as a school, lodge room, church and place for community gatherings and dances.

The portholes in the second story are no longer visible, as the outside has been weatherboarded and the building perfectly preserved. The interior has been modernized to some extent and furnished with artistic old style Colonial furniture, collected by the owner, Mrs. Edith E. Prettyman, in her travels at home and abroad. The methods used in building this historical landmark have proved of intense interest to summer tourists, especially architects, engineers and builders.

* * * *

Common Brick to be Cheaper

Common brick will be cheaper in the future, according to the Monthly Digest of the Common Brick Manufacturers' Association, because the manufacturers are installing labor saving machinery, thereby reducing production costs. A ready market for their product during the past three years has enabled the producers to make money, and profits are now being put back into the plants by way of improved machinery. It has been estimated that through the use of the latest plant methods, the average brick manufacturer can operate with about 25 per cent of the labor required in a plant not equipped with modern manufacturing devices.

City Planning and Housing

CAROL ARONOVICI, Associate Editor

Social Progress and the Open Road

By CAROL ARONOVICI, City Planner

CIVILIZATION and progress cannot be understood without at the same time conceiving motion, nor can we develop a theory of civilization without a full recognition of the principles of human contact.

Gumplowitz and his follower Ratzenhoffer advanced a whole system of social philosophy upon the theory of the struggle of groups and races through contact and conflict between these groups and races. Odin and Ward have pointed out the advantages that civilization gains through intensive human contact and mass aggregation within the same group or race.

The city and community planners, despite the legalistic and popular limitations of their field and despite the deliberate or accidental neglect of the principles of his work, could, with the experience accumulated up to the present, develop a theory of civilization and progress based wholly upon the principles that underlie the open road as a social factor. All other theories could be shown as subordinate and complimentary to the theory of circulation of men, goods and ideas.

Ratzel, the German sociologist and geographer, tried to show that geography is the basis of social institutions and social progress. Geography is, however, only a static factor or at least it acts as an influence limited by circumscribed spheres of influence with constantly diminishing returns as adjustment of individuals and groups becomes established. Only by opening up the streams of traffic, by piercing the units of geographic influence and extending the boundaries of such influence can the local forces be released from the local influences. This must be accomplished by arteries of travel capable of carrying the achievement of each geographic unit to adjoining units.

Just as the history of building design is intimately related to the evolution of our religious, social and political institutions, so the building of civilization is intimately interwoven with the development of the avenues of travel leading to such objective points as the palace, the cathedral or temple, the field, the water front, the open country and the forest, the enemy's camp, the neighboring tribes or the boundaries of political units.

How keenly some planners realized the value of the planning of highways and streets is best illustrated by the reconstruction of the City of Paris by General Haussmann who developed a street system suitable not alone for the display of the beauty and charm of the queen city, but a system of boulevards that would expose to the attack of Napoleonic guns the bodies of the armies of men whether they be rebels or enemies from without.

In a discussion of the importance of highways and byways as factors in human advancement, one is hampered by the vastness of the subject

Editor's Note. Dr. Aronovici's next article will deal with the Highway as a Subject of Research.

and the lack of available research material that would point the way in the selection of salient facts. The range of the units to be studied is so vast that nothing short of a large volume would give adequate perspective even to an outline study of the subject.

Beginning with the humblest unit, the village street, one could review the whole gamut of avenues of travel through the highway, the waterways, the aerial routes, the telegraph and telephone, as well as the radio the most recently developed medium of intercourse and intercommunication. It may be said in passing that the radio and the aerial lines of travel and communication are pregnant with the promise of new forms of advancement that will revolutionize the highway, reduce space as a factor in human intercourse and break through the flimsy barriers of national and political boundaries.

Nothing that civilization has created need be trammeled by the barriers of geography. The planning of the cities and the countryside of the future will link up with all the millions of streams of travel and the tentacles of intercommunication woven over the surface of the earth and through the ether.

There is vital romance in the study of the street and the highway and a wide range of sciences are still to be called into play as the guiding forces in determining the objective, the character, the use, the orientation, the type of construction, the length and breadth of our streets.

Geography, geology, climatology, economics, psychology, sociology and history are a few of the sciences which should make their contribution towards the development of our system of intercommunication. The skilled engineer is necessary as the technician of construction, but his skill is local and in at least a limited sense confined to the structural aspect of the task. The true aim is purely social and human and should be determined on a human basis.

Even a careful reading of history does not reveal the important part that the highway has played in the development of human events. Armies and kings so overshadow the essentials of the peaceful and warlike relations between nations and races that no room is left to deal with the important place that the road has played in the strategy of armies, the development of nations, and trade. The subject may have been too obvious to be clearly conceived and placed in the limelight of historical discussion.

The last decade of the nineteenth and the beginning of the twentieth century represent the period of the most rapid development of means of travel. The automobile, the aeroplane, the zeppelin have lifted the civilized peoples out of the mire, and have suddenly changed our whole concept of space and time. We hardly realize that the means of travel available at the time of the American Revolution were scarcely superior to the means available during the ancient days of Syria, Babylonia and Egypt. It can be said without exaggeration that the last thirty years have witnessed a greater achievement in the development of means of communication than the period covered by the whole history of the human race prior to these last three decades.

This means that we must develop not alone more avenues of intercommunication, but that we must revise our whole philosophy, science and art of community and road building to keep pace with this progress. To do this we must not only meet needs as they arise, but we must revolutionize our method of thinking and feeling and using roads. The city of the future will resemble as much the city of the past, as the modern automobile resembles a Roman chariot.

The Board of Appeals in California Towns

By CHARLES K. SUMNER, Architect

IN an excellent article which appeared in the June issue of The Architect and Engineer entitled "The Status of Zoning in California" by Mayor Frank B. Stringham, of Berkeley, the question was raised whether our small towns can afford to maintain Boards of Appeals. In view of the effort we are now making toward the amendment of the State Enabling Act, to authorize such Boards, I think this question deserves very careful consideration.

The foremost zoning authorities in the United States are of the opinion that the Board of Adjustment or Appeals is a prime necessity in zoning administration, as affording a convenient and prompt remedy in case of arbitrariness or error in the decisions of administrative officers, or of injustice or unnecessary hardship when the literal meaning of the zone ordinance does not properly apply, and consequently in protecting our zoning regulations from attack through the courts. My personal observation of zoning has convinced me that the Board of Appeals will have also a reciprocal and corrective influence upon all zoning administration.

Are these benefits which may be had from the Board of Appeals to be limited only to our larger cities? Or is the Board of Appeals practicable, as it should be, wherever zoning itself is desirable and practicable?

The answer to these questions lies, of course, in the special kind of service which a Board of Appeals should render, and the availability of persons who are qualified to render that service, either freely, or at such cost as the community can afford.

What is the service of a Board of Appeals? While I have had no direct experience with such a Board, the questions which have been referred to them, according to report, are of precisely the same kind as those which come before the average City Planning Commission from time to time in the administration and interpretation of a zone ordinance. Let us consider a few typical examples.

Mr. Smith wants to build a house and garage on a corner lot. A set-back of 40 feet is required on the main street, and 25 feet on the side street. It is permitted, however, to take either street as the front, and to observe a set-back of only 11 feet on the other street. Mr. Smith elects to front his home on the main street, and to place both his house and his garage 11 feet from the side street. But a permit for the garage is withheld on the ground that this structure should observe the regular set-back line of the side street, in order to avoid injury to the adjacent properties on that street. On examining the case it is found that this ruling is not warranted by the explicit wording of the ordinance, and that in certain other cases it would be contradictory and impossible to apply. This is a case, therefore, of administrative error in the application of the ordinance, which it would be the duty of a Board of Appeals to examine into and correct.

Mr. Jones builds a bungalow court containing a dozen apartments, and four garages in connection therewith. The lot is in the apartment district, but owing to an oversight in the drafting of the ordinance the restriction of four garages to a lot, which obtains in the single family district, has been carried over and applies also in this district. Mr. Jones finds that he needs at least eight garages instead of four, but

this is plainly in violation of the ordinance. Obviously this is a case in which the Board of Appeals would be expected to rule that the literal meaning of the ordinance involved unnecessary and unintended hardship, and therefore should not apply.

Mr. Brown owns a very large house on a very large lot, all beautifully planted and improved, but impossible to sell or lease on a reasonable basis because of its size. It is in the single family district, and consequently Mr. Brown can house only one family in it although his neighbors may subdivide their lots as much as they like and locate eight or ten families in small bungalows on an area no larger than his own. True the ordinance is inconsistent and defective in this respect, but that does not help Mr. Brown. As the matter stands, a Board of Appeals would probably rule that this is one of those specific cases where the terms of the ordinance should be varied to promote substantial justice, and would give relief to Mr. Brown under proper conditions safeguarding the neighbors' interests.

Mr. White, prior to the enactment of the zoning ordinance, subdivided his property in such a way as to leave a small lot, which he improved with a small house, leaving a suitable space for a future garage. After the ordinance came into effect he applied for a permit to erect the garage, but discovered that it could not be placed on the site provided for it under the terms of the ordinance. And there was no other place on the lot where a garage could be located. Mr. White obviously could not sell the property, or lease it to advantage, without a garage. A study of this case by the Board of Appeals would show that the restrictions upon the location of garages have been dictated, not by considerations of public safety, but by a desire for pleasing appearance, and that the ordinance should be amended so as to bring the restrictions in question under the proper exercise of the police power. Even such amendment, however, might not give Mr. White relief. It appears, therefore, that the exceptional conditions in this case would have to be considered by the Board on their own merits, with due regard for public safety and welfare, while substantial justice would be done and the spirit of the ordinance observed rather than its literal meaning.

I think that these are fairly typical of the questions that will come before a Board of Appeals in any small town, and it does not seem to me that the personal qualities necessary to handle them properly will be very hard to find. Legal knowledge is not required, and the technical attitude often found associated with it might even prove to be a handicap. A thorough knowledge of local feeling and conditions, enlightened common sense and the well developed sense of justice of an impartial, judicial type of mind, are about all that should be required. If these are sufficiently brought to bear upon questions like the above they are not likely to be taken to the courts. Men—and women—who are qualified in these ways can be found in almost any small community and drafted for service on a Board of Appeals. There is no reason why they should not meet their responsibilities as well, say, as the members of the average City Planning Commission, or Board of Works, School Board, or any similar body which is recruited from public spirited, reasonably qualified citizens. Like these other bodies, they can, of course, draw upon expert outside assistance whenever occasion may require. In questions of law the City Attorney will be their guide. The selection or appointment of such a board is, of course, no mean responsibility. Its powers are quasi-judicial and are not to be abused. If these powers are to be exercised to expedite justice and keep the zone ordi-

nance out of the courts, then the personnel and the procedure of the Board of Appeals must be such as to command the respect both of the people and of the courts. There should be in such a Board a fair balance of conservatism and progressiveness, of respect for constitutional guarantees and of responsiveness to the broadening interpretations and applications of the community or police power.

Ordinarily the members of a Board of Appeals in a small town would serve without pay, I presume, as do members of these other bodies. This would depend largely, of course, upon the volume of work it is called upon to do. There is a limit beyond which it is not fair to expect public service on this basis, and beyond which it will not be forthcoming. But, as I have observed, questions which are referable to a Board of Appeals do not arise very frequently in a small town, and if a Planning Commission can dispose of such questions in its routine meetings, as we know is being done, there is no reason why a Board of Appeals cannot meet the demands put upon it without exacting too much of the members' time.

As a city grows, its structures and utilities diversify and issues of property use become more numerous and I suppose more complicated, so that a Board of Appeals to cope with them will come to have some of the character of a permanent Court of Arbitration in the frequency of its hearings and the technical and special knowledge required of its members. In circumstances approaching these the members must, of course, be properly compensated. But as a city grows, its wealth and its ability to pay for such services also increase in like proportion.

I have already referred to the corrective influence which a Board of Appeals should have upon zoning practice, and this influence should be especially valuable in our smaller cities. For if the ordinance is duly amended and corrections of practice are made as the decisions of the Board of Appeals will indicate, there should be developed in time a fairly workable and constitutional instrument under which the work of the Board will be minimized instead of multiplied as the City grows. At any rate, if the usual defects and deficiencies of the zone ordinance can be thus corrected, and sound training in administration thus acquired, the cases brought before the Board of Appeals should be limited chiefly to those arising from the exceptional conditions which are inevitable in any city and which no man-made ordinance can possibly cover.

I am aware that my opinion as to the practicability of the Board of Adjustment or Appeals in our small towns are based largely upon my experience and observation in Palo Alto, which we citizens of that pleasant college town believe to be exceptionally favored with community spirit and intelligence and the qualities I have named as essential for service with a Board of Appeals. But I am sure that other small communities will not concede us too much in these respects, and also that wherever, in small towns or large, there is found sufficient community intelligence and cooperation to demand the benefits of zoning, there will be found also the spirit and ability to provide the proper safeguards for it and carry it wisely into effect.

* * * *

Keep Marble Work Free From Iron

Iron rust is the one staining agent which is able to penetrate marble and which cannot be removed. Therefore, in setting marble, care should be taken to prevent it from coming in contact with any steel or iron which might be subject to rust.

Better Protection for the Factory

By O. P. SHELLEY*

TYPICAL INSTALLATION OF UNDERWRITERS LABELLED FIRE SHUTTERS, PROTECTING WINDOW OPENINGS.

EVEN the public is coming to learn that brick or concrete walls alone do not constitute a "fireproof" building; that not only must the floors and roof be noncombustible but the exterior openings must be protected from adjoining fire hazards. Also the building itself may be profitably cut into units with the necessary connecting openings properly protected by firedoors. Such a factory will, if equipped with a sprinkler system, suffer but little from fires.

Most people think of fire protection in the terms of insurance rate reductions, entirely overlooking the fact that in case of a fire the loss of customers, the interruption to a going business, the loss of records, patterns, special machinery or equipment, stock on hand, the possible disruption of the organization, etc. are all things which the fire insurance does not cover and may be far more serious than the mere loss of the factory building. Therefore let us study some of the ways to protect from external fires and to confine a possible blaze to a small section of the building.

For the windows solid steel sash is now almost universally used and should be specified in combination with wire glass. Such sash are now inexpensive (costing no more than the masonry wall they displace) and give perfect lighting to the interior of the building, adequate and even ventilation and are practically fireproof.

Windows which adjoin special fire hazards should have the added protection of automatic steel rolling window shutters equipped with the recent improvements of testing and resetting devices, together with a rewinding device, all of which enables these shutters to be tested, wound up and reset from the inside of the building and without even opening the windows. These window shutters should have (and this applies to the steel rolling fire doors mentioned later) an escapement governor which forces down the shutter when the fusible link attachment is burned or released and then reverses the action slowing the shutter at the end of the travel.

For fire doors there is the tin-clad door sliding on inclined tracks and counterweighted for operation. These tin-clad doors are cheaper than the steel rolling fire doors and are often used where appearances and saving of wall or floor space is not considered an object.

For firewall openings where space is an object and for all elevator openings the automatic steel rolling door is standard.

In the case of elevator openings, the safety commission advocates the use of safety gates with automatic steel rolling shutters. The latter normally stay open or shut at will without disturbing the automatic feature. The old type of sliding door which stayed closed kept the shaft dark, foul and poorly ventilated, was noisy in operation and continually out of order.

One other type of factory protection which has forged to the front is the use of safety treads on stairs. The present accident and com-

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ALL METAL AUTOMATICALLY CLOSING FIRE DOOR

SWINGING TYPE FYER WALL AUTOMATICALLY CLOSING FIRE DOOR

INDUSTRIAL OR CORPORATION GARAGE, SHOWING USE OF STEEL ROLLING DOORS FOR EACH TRUCK

pensation laws make it almost obligatory to protect the safety of workers and protection is far cheaper than accidents. One accident may cost more than the cost of safety treads for an entire factory. The accompanying illustration shows clearly just why protection is so badly needed on the front of all stair treads, whether the stairs be made of wood, cast iron, cement, marble, steel, etc.

In considering any of the various steel sash fire doors, safety treads, etc., it is advisable to adopt the Underwriters labelled type because this ensures a certain degree of reliability, provides something tangible on which to base insurance reductions and gives a standardization as well as a feeling of security.

TYPE OF STEEL SASH USED FOR LOFT BUILDINGS

TYPE OF STEEL SASH USED FOR FACTORIES

Safety Gate and Automatic Steel Rolling Door on Elevator Opening

A person coming down steps usually carries his weight with the ball of the foot on the edge of the step which should be slip-proof for safety.

Garage Ventilation

THE increasing demand for parking space in mid-city sections, together with the blockading of streets, has made it imperative for police departments to regulate parking time of standing automobiles. The considerable inconvenience these regulations are causing the owners of both pleasure and commercial cars has in turn given rise to an insistent demand for mid-city parking garages.

Because these garages must be located in congested sections, artificially induced ventilation of these buildings, to rid them of the obnoxious gases emitted by cars entering and leaving, has become a matter for serious consideration.

The following is the manner in which the ventilation problem was solved by one of the most modern garages in the world, recently opened to the public:

A ventilating shaft was located approximately in the center of the building. At the top of the shaft a large suction fan was placed. Adjustable louvers were located in the shaft near the ceiling of each story. The fan produced a partial vacuum in the shaft, causing the impure air to flow into the shaft and out at the top. By means of the adjustable louvers, control over the individual story is effected.

The proper location for the louvers at each story should receive especial consideration. It has been found that, where the ventilating shaft is located in the center of the building, away from the windows, most efficient ventilation is secured in the summer time, by placing the louvers at the ceiling, as the gases emitted by the motors are hot and will immediately rise to the ceiling.

In the winter time, however, the natural circulation in the building will be upward at the windows, across the ceiling toward the center of the building and thence downward and along the floor to the windows. With the flow as described it is advisable to locate the louvers in the shaft at or near the floor, provision also being made for exhausting a small quantity of air near the ceiling.

* * * *

Public Opening of Bids Best

The public opening of bids is endorsed by practically all reputable local architects, says a bulletin of the Associated General Contractors of San Francisco. "Actual procedure depends on the circumstances of each individual case, in part on personal preference or prejudice of the owner, but chiefly on the wishes of the bidders.

"Contractor and owner or architect alike are free agents in the matter of submitting and receiving bids. So far as architects are concerned, every one has been fully informed regarding our Working Rules and, with very few exceptions, has indicated a willingness to co-operate in observing them. It is, therefore, discretionary with the bidders in each case whether they shall be literally complied with.

"As a matter of fact, it would appear to be an act of ordinary business prudence for a contractor to accompany his own bid to the opening. It should also impress an architect or owner favorably to see a contractor show such personal interest in the job. Aloofness is often interpreted as indifference.

"Our association exists largely for the purpose of facilitating the standardization of business practices and of affording members a means of co-operation for the maintenance of their rights. A contractor is much stronger backed by a recognized organization than he ever could be standing alone."

Possibilities of Panelling in the Home

THE idea of decorating walls and ceilings with panels was first tried in France a great many years ago. French mural artists and decorators developed the panel, by applying it in varying shapes and places, until it became one of the most useful elements of interior decoration. These artists enriched it with design and worked out numerous beautiful border and color treatments which have lived long after them.

In our homes today, use of the panel is effective and suitably applicable to almost any room, especially if the proportions of the room are good and the spacing of the architectural mouldings is planned by either an architect or one experienced in such work. It may be stated, as a truth of general application, that small rooms where furniture is of an informal nature are better if finished with border stencil, two-or-three-tone figured effects, shading, mottling, or color misting rather than with panels.

In size and shape panels may be treated in great variety. Panel mouldings, both in color and design, lend themselves to numerous forms. There are few methods of wall decoration that give the decorator such wide opportunity to express his or her skill and taste as does paneling.

If room furnishings supply all the color the room requires, panels may be used to give walls interest without strong color emphasis. If a room needs color, panels may be so finished as to provide it.

Like all painted walls, panel treatment is further recommended by its practical aspects: sanitation, washability and durability.

The wall surface outside the panel, the field, that is, is usually painted a little lighter in color than the panel or moulding. Mouldings, often times, are painted with a contrasting color. Interest may be added by two-toning panels or field, by shading panels, by use of all over stencils in panels or by giving panels a mottled finish.

The panel treatment lends itself especially well to narrow rooms or long halls. The height of rooms may be apparently reduced or increased with panels if properly used. Very often, in rooms in which wall board is used, a paneled treatment can be worked out, with the aid of paint and moulding, so as to cover and efface seams or cracks where the wall board joins. Panel mouldings may be of wood or they may be painted on the wall in such a way as to accurately represent wood.

* * * *

Elevator Efficiency in the Modern Office Building

The purpose of the present-day high-speed elevators, the arteries of the modern office building, may be defeated in part if not wholly by the neglect of the important problem of proper signal and elevator door and gate-operating equipment. The vital importance of answering the passenger signal with promptness and dispatch, the necessity of minimizing the time required to operate the elevator doors, and still maintain absolute safe conditions, can not be over-estimated if the high-speed elevator of today is to function with efficiency and give the service expected. Elevator service can never be of the best unless the signal apparatus, door-operating equipment and door hangers are properly installed.

This vast elevator traffic comprises almost as many systems as there are shaftways. Each building is a unit in itself. In many of them, where thousands press from early morning until closing hours and where cars dart up and down at the rate of 700 feet a minute, traffic laws and signals are as vital as on a railway system. The cars must move according to schedule. At the tap of a bell or a click from the instrument in the hand of the starter, the car on the ground floor in its proper turn starts on the upward flight.

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Published Monthly in the Interest of the Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast by The Architect and Engineer, Inc.

PUBLICATION OFFICE:
627-629 Foxcroft Building, San Francisco
Telephone Douglas 1828

The publishers disclaim any responsibility for statements made in the advertisements of this magazine.

Terms of Subscription
(Including postage) to all parts of the United States, $2.50 per annum; to Canada 75c additional; to all Foreign points $1 additional

Vol. 78 AUGUST, 1924 No. 2

WHAT IS MODERN ARCHITECTURE?

In the current number of The Nation, Mr. Fiske Kimball attempts to answer the question, "What Is Modern Architecture?" Portions of his scholarly discussion, given here, will be found of interest both from an historical and reminiscent viewpoint:

Speaking of her buildings, Henry James compared New York to "an ample childless mother, who consoles herself for her own sterility by an unbridled course of adoption." It is the current view that American architecture, under the lead of designers such as McKim, Stanford White, Charles Platt, and John Russell Pope, has turned its back on modernity and reconciled itself to a barren reproduction of the classic. It is not the true or vital view. If we consider more intently the work of this contemporary classic school, we will find it is not only creative, but that it has an underlying affinity, real though not obvious, with the progressive work in modern painting and the other arts.

In the thought of the nineties, by contrast, the insistent search for a "modern style," for an "American style," was bound up with the effort to find a new expression for modern materials and structure. Its doctrine, derived from the writings of Ruskin and Violet-le-Duc in the sixties, crystallized in the mottoes: "Form follows function" and "You may decorate your construction, never construct your decoration." It was in reaction against the historical eclecticism of the mid-century, the indifferent copying of historic forms, Greek, Roman, Gothic, and Renaissance. Taking to heart the environment theory of Taine, it emphasized the novel elements in modern life, rather than those of continuity with the past. Thus its attention was devoted primarily to the new products of modern materialism, steel and concrete, the skyscraper and the factory.

In 1895 Louis Sullivan of Chicago for the first time solved the problem of indicating the steel frame of the office building. He abandoned any wall surface in favor of a visible protective casing of the steel itself. This he accomplished in the Wainwright Building in St. Louis, and repeated and developed, the following year, in the Guaranty or Prudential Building at Buffalo. The essence of the building, its height, and the relatively greater strength of the vertical bars of the frame, he emphasized by doubling and accenting the vertical lines. The achievement in the expression of structure was widely recognized and ac-

claimed. Few, if any, tall buildings from 1897 to 1912 failed to show its influence, which extended far beyond the circle of consistent "modernists" who sought to abandon all historical forms. It was taken up also by the eclectics, and hybridized especially with Gothic, which itself involved the tendency to structural expression and an emphasis on the vertical. The skilful use of Gothic forms in so conspicuous an instance as the Woolworth Building, in the years 1911 to 1913, gave them increased currency. Even the most determined classicists did not remain untouched. Thus in McKim, Mead and White's Municipal Building, designed in 1908, the structural lines of the steel columns were accentuated by shallow vertical strips.

A parallel achievement in the expression of concrete factory construction was made by Ernest Wilby, associated with Albert Kahn of Detroit. In designing the first Ford plant at Highland Park, the idea came of exhibiting the concrete frame itself, and filling the entire space from pier to pier with glass. Only below the sills did a low parapet wall of brick remain. The new treatment, which had great practical and economic advantages, spread over the country like wildfire, and has given the American industrial building its characteristic physiognomy.

These realistic treatments of the subject matter of modern life have their obvious relation with the realistic movements in painting and sculpture, in literature and music. Painting from Courbet through the impressionists and neo-impressionists, sculpture in the hands of Carpeaux, Meunier, and Rodin, the music-drama of Wagner, the novels and plays of Tolstoi, Flaubert, Zola, and Ibsen, all seek characteristic beauty through truth to nature, rather than abstract beauty through relations of form. And while, nevertheless the men of fundamental greatness in the other arts, as in architecture, preserved a sense of form, the lesser men and the imitators fell into the formlessness which we see, for instance, in Monet's successors.

Against this formlessness of the impressionists, this scientific observation of nature, this equation of beauty with truth, there began a reaction, even before 1890.

* * *

In the architecture of the past the preeminent manifestations of pure or abstract form, as against a structural or sculptural emphasis, have doubtless been in the classic styles. Periods of renewed interest in unity and purity of form, such as those of the fifteenth and eighteenth centuries, have coincided with reversions to the classic elements, which have come to constitute a universal language, of elementary geometrical simplicity. It is in this sense that we must interpret the new revival of the classic which has decidedly gained the upper hand in American architecture during the last generation.

It is important to note that this movement in its origin owed little to contemporary Europe and that it has remained American in leadership. Although the leaders have been men of European training, it has not been the style of their French masters which has determined theirs. McKim and White came back from France with their portfolios full of picturesque high-roofed chateaux, such as Hunt, their predecessor at the Ecole des Beaux-Arts, had already been transplanting here. Their initial works, whether showing the influence of Richardson or of the Queen Anne period, were themselves romantic in composition. The earli-

est work in a new manner, one which in the sequel assumes importance of the first magnitude, was the group of Villard houses in New York, built in 1885 on Madison Avenue between Fiftieth and Fifty-first Streets. The four houses were not individually differentiated, but were welded into a single great palace, simple and uniform, its details suggested by the Italian Renaissance. When I once asked Mr. Mead how this sudden departure came to pass in the work of the firm he spoke of the gifted and unfortunate Joseph Morrill Wells, one of their designers, and showed me Wells's two sober drawings of the Farnese Palace and Lescot's wing of the Louvre, still on the walls of the office, representing his classic ideals, which became the ideals of his great associates.

A series of influential works quickly followed, the most notable being the Boston Public Library, for which McKim's uniform and majestic competitive design was adopted in 1888. Then came the marvelous phantasm of 1893 at Chicago, in which the unsubstantial realities of wood and plaster were bodied forth in an ideal splendor and harmony of form. Here McKim himself was rivaled and outdone by Charles Attwood in his two superb designs of the Peristyle and the Fine Arts Building, the latter a masterpiece which well deserves the promised resurrection from its sad decay. The effect on current practice was electrical. Almost overnight the whole public architecture of the country was turned into a monumental and classical channel. When, in 1901, McKim and Burnham made the great plan for the architectural development of Washington, the movement found a nationalistic sanction in the buildings of the early republic, unparalleled abroad in their literal adherence to the classic ideal.

Although, to many later works of the school, the Ecole des Beaux-Arts has contributed its analytical science of planning, it is a mistake to suppose the movement itself to be, as Jacques Gréber has asserted, "preuve de la force d'expansion de la génie francaise." The scores of élèves who have returned from the unrivaled discipline and emulation of the Paris school have had here to lay aside their French language of form, based on characteristic emphasis and on lavish, dynamic energy, to learn anew a language of almost mathematical simplicity and of Dorian harmony. Not one has permanently escaped the overwhelming domination of the American classic.

Even the citadel of functionalism, the skyscraper, has finally been captured. In 1912 there rose in upper Fifth Avenue the building of the Century Holding Company, the first of the "millionaire apartments," at the corner of Eighty-first Street. Here McKim, Mead and White no longer compromised, but were true to their own implicit theory of form—that "instead of constructing first, without preoccupation with the final appearance, promising oneself to utilize the ingeniousness of the construction as the decoration, one should relegate the ingenuities of structure to a position among the secondary means, unworthy of appearing in the completed work." The steel frame disappeared again behind sheer, unbroken walls, the merits of which lay in uniformity and proportion. Almost simultaneously came Charles Platt's Leader-News Building in Cleveland with its vast plane surfaces of grooved stone. Now the multitude of high apartment buildings east of Central Park follows the new precedent with one accord, and the Federal Reserve Bank raises its sheer cliffs of unbroken masonry in the narrow lanes downtown. For better or worse, the struggle to express the steel frame, so burning in the

nineties, has become a dead issue.

Meanwhile foreign conquests have begun. The French, who made fun of the plaster colonades at Chicago in 1893, reproduced them at the Paris Exposition of 1900, so unlike all its European predecessors. The English, abandoning their long tradition of ridicule, are frank in admiration. The leaders of the new generation, such as Adshead, Richardson, and Atkinson, know America well. They have modeled their schools on ours, and are striving to bring about a revival of their own fine classic architecture of 1800. The young pensioners of the Royal Institute have already come to America to study, more than once; and now with the founding of the Bossom scholarship they will do so as a regular practice. They are not interested merely in the commercial and material aspects of American architecture, but equally in the largeness and simplicity of style. With the building of Bush House in the Strand, the first conspicuous monument of this style on English soil, the buzz of admiring tongues tells us that in architecture American hegemony is won.

In the never-ending flux of artistic creation, what is the "modern" of one generation is no longer the modern of the next. We may admire the apt epigram of the nineties, but if we persist in repeating it, it becomes a platitude of today.

MORE ABOUT "OR EQUAL"

The Michigan Architect and Engineer, in its May issue, editorially discusses the "Or equal" phrase, so commonly used in architects' specifications, and concludes with the following forceful arguments in favor of positive specifications that leave no loop holes for substitutions:

"As an al'round remedy, or perhaps satisfactory compromise between the 'or equal' and the unalterable definite specification, the one requiring a basic bid with prices upon alternate products or materials which will likewise conform to the specifications, appears to meet with the approval of the large majority concerned.

"But it does not matter whether it is the 'or equal,' the so-called flat, or the basic and alternate type of specification or any other, unless the architect and the owner stand squarely by it.

"Otherwise they are all meaningless, valueless and harmfully misleading. Strange to say there is a larger percentage of architects and engineers who permit contractors to make jellyfish of them and scraps of paper of their specifications than seems possible.

"In some instances the weak, indecisive, sheep-like character of the architect or the engineer is not so much to blame for the voiding of specifications after bids are accepted, as it is the desire to be a good fellow with favored contractors.

"But favoritism that permits contractors or material men to change specifications on a job, is on a par with the purchasing agent who allows someone he is doing business with to make his wife a present of a grand piano or other valuable articles of household utility or personal adornment.

"There isn't any two sides to it, the architect or engineer who lets the successful bidding contractor or material man change his specifications is rankly unfair to all others who may have presented estimates.

"What is needed more than any revamping of the methods of writing specifications is to make specifications unchangeable after they are issued and the job is let.

"Some architects claim the fault lies with the owner, because contractors induce owners, for one reason or another, to sanction changes and substitutions out of line with the original specifications upon which the job was given out.

"That's pure bunk. It's the excuse of the spineless and the grafter. Any architect or engineer who desires to, can stop that sort of work. All he needs to do is to let it be known that the first contractor or material man who goes over his head to an owner in an attempt to modify or change his specifications, will never again be permitted to figure on another job out of his office. He'll have no more trouble if he means it and stands pat, should any contractor or material man imagine he is joking.

"After all, the architect or engineer should never permit anyone to get between his client and himself, especially contractors and material or supply men. It's poor judgment and business imbecility. That's putting it mildly for in a majority of cases the owner is quite justified in believing the architect or the

engineer did not line the job up right in the first place. That creates loss of confidence, loss of prestige and loss of business.

"Make your specifications, your specifications and enforce them to the last period. Don't let contractors, material or supply dealers dictate to you even through the owner. Be master of the jobs entrusted to you, not the tool of those who have axes to grind at the expense of your personal reputation and final responsibility."

ARCHITECTURE FROM BRITISH VIEW

In a review and criticism of the sculpture and architecture at the Royal Academy exhibitions, Mr. Arnold Whittick, writing in the Stone Trades Journal for June, says that "Architecture exists as a fine art in conforming to the principle of decoration appealing to the emotions by rhythmical lines, harmony of mass and the disposition of light, shadow and color." Continuing, the writer says the architecture is strengthened if it conveys by symbols an intellectual meaning, as the forms of the Gothic style express the devotion and heavenward yearning of a religious people. . . . But again, this intellectual significance of the forms is valueless as art unless it is embodied in aesthetically satisfying forms, in harmony of mass and ornament. In the limitation of the elements by which it appeals, architecture is most like music of the other arts, for it is not dependent on, nor embraces, as does poetry, painting and sculpture, the imitation and disposal of natural form, but its forms like the chords and phrases in music are in themselves artistic creations.

Other than these considerations, a building is not architecture, but merely the science of building. If, then, in factory building utility is solely considered, it cannot be regarded as architecture, whereas the monument is purely and exclusively a work of fine art, for it serves no utilitarian purpose, but exists only to express an emotion.

"Now the very thought of a building being an architectural work solely by reason of its decorative attributes is, in some modern designs, in danger of being ignored. Eager to cherish the idea that architecture is an art, why it is an art has been forgotten and the science of building has come to be regarded as a factor in the art. The cult of simplicity, and what is called classic restraint and severity, has been allowed, and it has furnished an excuse to make office buildings like factories, with their fronts a vast sea of rectangles, with two columns and a circular arch for the doorway to redeem the utter monotony of the rest. Domestic houses are rendered dull and uninteresting by this simplicity cult, witness, for example, the Government dwellings for artisans, etc.; these can hardly be termed architecture. . . . But when these and their kindred are dismissed from thought, there is much in modern architecture that is truly beautiful."

Our Unknown Builders

From Engineering and Contracting

ARCHITECTS and engineers are nearly, if not fully, the least known important class of men of this age. The names of those whose works are most conspicuous to the eye, and in most common daily use are practically unknown to the man in the street. Judges, lawyers, baseball players, soldiers, preachers, actors, politicians, merchants, musicians, scientists, authors—scarcely a man who reads but can name some of each and tell you of their specific claims to preeminence—but how many men can name a single, great, modern architect? And how many less can name a half dozen architects and their accomplishments?

The engineers fare slightly better. General Goethals is known to everyone. A few, like William Mulholland and M. M. O'Shaughnessy on the Pacific coast, are generally known in their own territories. But much as the profession is glorified before the public, its members (even its greatest members) remain practically unknown.

Even persons who consider that a broad education must cover the great names of the past, and who know at least something of Michael Angelo, Da Vinci, and Vitruvius are sometimes

wholly ignorant of the great builders of today.

While the why of this condition is primarily a problem in psychology, the condition itself is one which the engineers and architects are warranted in remedying if they can. It is not an easy problem. Most of the occupations that we have contrasted with the builder's, place their members actually and physically in the public eye, and in addition furnish some sort of thrill. The athlete, the actor, and the orator are of this class. Architects and engineers on the other hand not only work in seclusion but do a work that carries no thrill to the average mind. The engineer's accomplishments are admired and often referred to in extravagant terms; the architect's work carries pleasure to thousands who know no principle of composition or analysis; but emotions like those of a contest, stirring music, oratory, physical hazard (real or portrayed) they do not produce.

Furthermore, these other classes are purveyors of amusement or instruction, and their popular members are sought in person or by name when their particular amusements or instructions are wanted. This accounts for the wide knowledge of authors: most people know who writes the sort of thing that they enjoy.

The fame of the scientist rests mostly on the sensational. The best and most valuable of work will not attract attention unless it is spectacular. So here is a class which, while having an occasional well known member, is for the most part as obscure as the engineers and architects.

Magnificent buildings and wonderful engineering works are accepted as matters of course. They serve their daily purposes for some, and fall under the observation of others, without calling forth conscious effort or intention. None but students make special trips to see them.

These are some of the reasons at least why builders have not the fame they deserve.

New Schools

Bond issues are to be held shortly to take care of new school construction work in Oakland and Berkeley. About $7,000,000 will be needed in Oakland and $2,000,000 in Berkeley. No architects have been selected thus far by the Oakland officials, but the Berkeley Board of Education has gone on record as favoring the appointment of Messrs. Ratcliff and Plachek to design the Berkeley schools. The appointments are contingent on the bonds carrying at the November Election.

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With the Architects

Building Reports and Personal Mention of Interest to the Profession

Architect Louis Stone Busy

Architect Louis Stone is associated with Architect B. J. Joseph in preparing plans for the Portola Junior High School to be erected at Girard and Bacon streets, San Francisco at an estimated cost of $650,000. There will be a group of buildings including an auditorium, gymnasium and shops.

Mr. Stone is associated with F. E. Warner in preparing plans for a three-story brick store and hotel to be erected in Pittsburgh, Contra Costa county, at a cost of $60,000; also a one-story brick bank and store building at Pittsburgh for Davis Brothers and for additions to the Pittsburgh Grammar School costing $9,000. Preliminary plans are being made for completion of the high school auditorium at Stockton at a cost of $30,000.

Architect Wins Suit

Architect Frederick S. Harrison of Sacramento has been given judgment against the Herald School District of Sacramento county, for $319.40 and costs. Architect Harrison was retained by the Alabama School District, before it was changed to the Herald School District, to plan and supervise construction of a school building. He was not fully paid for his services and filed suit to recover $340.08.

Open San Francisco Office

Messrs. H. E. Warrington and C. H. Kromer, members of the American Society of Civil Engineers, have opened an office in the Underwood building, San Francisco, under the firm name of Warrington & Kromer. They will practice civil and structural engineering, including railroad and highway bridges, the structural work of buildings, wharves, dams and various structures for water supply, sewage disposal works, etc.

Flats and Apartments

Architects Hutchison & Mills of Oakland have completed plans for a two-story frame flat building to be erected at 49th street, Oakland, for Mr. Walter B. Bunker; also a three-story store and apartment building on College avenue to cost $55,000 and a two-story reinforced concrete warehouse and wholesale commission building on 11th street, Oakland.

Admitted to Practice

Five architects were admitted to practice in the State of Washington by reciprocity and five by examination, pursuant to the examination held at the State University, Seattle, June 30 and July 1st and 2nd.

Those admitted by reciprocity are Messrs. Ralph Adams Cram and Frank W. Ferguson, of Boston, noted church architects who are erecting the new Presbyterian church in Tacoma; William Kingsley and Roy D. Rogers, Seattle; Fred Grafton Rounds, of Pullman.

By examination were admitted Messrs. Alban A. Shay, E. P. Newbeury, Arthur P. Herman, E. C. Rising, Otis E. Hancock, Seattle.

Warehouse and Factory

Architects Meyer & Johnson have completed plans for a three-story reinforced concrete warehouse and factory, 90x200, now being built by George Wagner, Incorporated, on the block bounded by 18th, 19th, Harrison and Alabama streets, San Francisco. The estimated cost is $100,000. The same architects are completing drawings for a brick and terra cotta emergency hospital for the City of San Francisco, to cost $60,000. Plans are being revised by the same architects for a community center at Piedmont, estimated to cost $20,000.

Workingmen's Hotel

Architect Julius W. Krause, of Los Angeles, is preparing plans for a six-story class A workingmen's hotel to be erected on the northwest corner of Washington street and Central avenue, Los Angeles. The owner is Henry G. Voeckell and the cost is estimated at $425,000.

Two Residences

Architect Albert Farr and John Francis Ward of San Francisco, have completed plans for a $20,000 Italian house to be built on 36th avenue near Geary street, San Francisco, for Mr. R. W. Maples, and a $10,000 house in the Havens tract, Piedmont, for Mr. Vernon Waldron.

Glendale Stadium

A stadium to cost $100 000 will be erected at Glendale from plans now being made in the office of Architects Walker & Eisen, of Los Angeles.

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Yosemite Mountain Club

A new country club building is planned for the high Sierras near the Yosemite National Park, the organization to be known as the Yosemite Mountain Club, which has opened offices in the Baker-Detwiler building, Los Angeles, and Crocker building, San Francisco. Plans for the clubhouse which will have fifty rooms, dining room, ballroom, gymnasium, etc., are being prepared by Architect G. Stanley Underwood of Los Angeles. The construction work is to be in charge of Gutleben Brothers, I. W. Hellman building, Los Angeles.

Temple Plans Complete

Plans have been completed by Architects Bakewell & Brown and Sylvain Schnaittacher, associated, of San Francisco, for a new Temple Emanu-El, to be built on Lake street and Arguello boulevard, San Francisco. The design is Spanish. The main synagogue will have a seating capacity of 1800 persons. A feature of the edifice will be a tile dome rising 175 feet above the street level. More than a million dollars will be expended on the improvements.

Masonic Temple

Architect S. Heiman, 57 Post street, San Francisco, has completed working drawings for a $90,000 building for the San Rafael Masonic Hall Association. Besides lodge rooms and auditorium there will be five stores and twenty-two offices. Mr. Heiman has also prepared plans for a two-story store and loft building for the Lachman Company on Mission street, near 16th, San Francisco. Construction will be of brick.

St. Mary's Hospital

Plans are being prepared by Architects Shea & Shea for a $500,000 addition to St. Mary's Hospital at Grove, Stanyan and Hayes streets, San Francisco. One wing will provide one hundred additional rooms. There will also be a new clinic building and operating pavilion.

Undertaking Establishment

Plans have been completed by Architect Walter C. Falch, Hearst building, San Francisco, for a three-story frame and stucco undertaking establishment and apartments to be erected at Market street and Duboce avenue, San Francisco, at an approximate cost of $40,000. The owners are Gantner Bros.

Addition to Kohl Building

A two-story class A addition is to be built to the Kohl building on the east side of Montgomery street, San Francisco, from plans by Architect Henry H. Meyers. Marion L. Lord is the owner of the property.

Death of Albert L. O'Brien

Albert L. O'Brien, 48, member of the architectural firm of O'Brien Bros., Incorporated, with offices in the California Commercial Union building, died of heart trouble at the St. Francis Hospital, July 20th. Mr. O'Brien was a native of San Francisco, and was educated in the Polytechnic High School and Mark Hopkins Academy. For a number of years he was associated with the firm of T. J. Welch which later was known as Welch & Carey. After the fire in 1906 partnership was formed by Mr. O'Brien and his two brothers, C. J. & W. J. O'Brien, under the firm name of O'Brien Brothers, Incorporated. The business will be continued under this name, the firm specializing in commercial work.

Firemen's Fund Plans Extensions

An additional floor is to be built on the roof of the Firemen's Fund Insurance Company's building at California and Sansome streets, San Francisco, to provide rest room for employees, dining room and kitchen. Plans were prepared by Architect Lewis P. Hobart. It is understood the company also plans to improve the lot adjoining its building and facing Sansome street with an eight-story class A office structure.

Personal

Mr. Frank Wynkoop, architectural designer, has removed his offices and drafting rooms from the Farmers and Merchants Bank building, Los Angeles, to the new Kress building, southwest corner Pine avenue and Fifth street, Long Beach.

Prof. C. W. Cook, for 12 years with the University of Southern California, announces he will conduct a private class in reinforced concrete, beginning Sept. 1 and continuing until June 30, 1925, in the Y. M. C. A. building, Los Angeles.

Mr. A. Kempkey, San Francisco consulting engineer, has been appointed chief engineer on the Gordon Valley water project for the city of Vallejo, succeeding Mr. C. E. Grunsky of San Francisco, who resigned.

Messrs. Louis N. Crawford and J. Carter Pennington have opened an office for the general practice of architecture at No. 15 Wade building, San Luis Obispo, California, and are desirous of receiving building trade catalogs and pamphlets.

Additions to Sacramento Hospital

Plans have been completed by Architect R. A. Herold of Sacramento and bids will be opened August 30th, for two additional units to the Country Hospital, consisting of power house and laundry. The appropriation is $92,000.

Million Dollar Theater Opens

The Forum theater, one of the finest on the Pacific Coast, has recently been opened in Los Angeles. The new playhouse was constructed at a cost of $1,000,000 and designed by Architect E. J. Borgmeyer. The architecture is the Roman type and representative of the Forum of Rome. Eighteen hundred people can be accommodated in the theater, while the roof garden, which has complete cafe service, has a capacity of 200 persons. Adjacent to and owned by the theater is a parking space capable of accommodating 500 cars.

The main switchboard and all the projection equipment in this new theater were supplied by the Westinghouse Electric and Manufacturing Company of East Pittsburgh, Pa. The method of furnishing direct current for projection is the latest and most modern of any theater installation. Two motor generators, each of 110 amperes, 80 volts direct current capacity, are used. One generator is driven by a 60 cycle, 220 volt, 4 pole motor and the other by a 4 pole motor operating at 50 cycles and 220 volts. The generators run in parallel on a common bus and the projection machines, spots and stero arcs are operated from this main bus. In case of failure of the 60 cycle power line, the 60 cycle set automatically drops out, allowing the 50 cycle machine to carry the load, and vice-versa.

The two sets are so interlocked that failure of power on either machine will open the a-c. starter and d-c. breaker of that machine; an overload on either generator will open both the a-c. and d-c. sides, and reverse current on either generator will open both a-c. and d-c. sides of the machine reversing.

The operating room is equipped with two projection machines operating 80 amperes at the arc. There are two spot lights, one 50 amperes and the other 35 amperes. An 80 ampere flood light and a double 25 ampere dissolving light complete the projection equipment. The main switchboard is located in the projection room and contains the push button switch for starting the motor-generators, which are placed in another room.

Residence Work

Plans have been completed by Architect C. O. Clausen, Hearst building, San Francisco, for a $12,000 house to be built on Santa Ynez and Otsego avenue, for Joseph Delucchi, and a $10,000 country house at Los Gatos for Mr. Weidman.

Hanford School Auditorium

Architects Coates & Traver, of Fresno, have completed plans for an auditorium for the Hanford High School. The bids are to be opened on August 27th. The estimated cost is $125,000.

Apartment House Mail Boxes

The United States Postal Department calls the attention of architects, engineers and designers of apartment houses, to Order No. 9596, effective September 1, which requires the installation of mail receptacles having the approval of the Post Office Department. The order does not apply to apartment houses, family hotels and flats that have a system of mail boxes already installed, but does apply to apartment houses under construction and to new ones being planned. The boxes must be large enough to hold mail that naturally comes to them, say long letter mail, approximately 12 inches in length and magazines 18 inches in length. The boxes must have a master key equipment. Architects are requested to provide for these mail boxes in their plans and specifications.

New Building Paper on Market

The Strable Hardwood Company, 537 First street, Oakland, have been appointed distributors of Triple-Sheath building paper which is manufactured by the Safepack Mills in Boston, Massachusetts. It is claimed that this paper is one of the most satisfactory waterproof products on the market as it will not disintegrate, is clean to handle, light and durable and is easy to lay under floors, clapboards and around window frames. The paper will not break and its manufacturers say it is absolutely waterproof and weatherproof.

New Mission Theater

At an approximate cost of $75,000 the F. J. Young Investment Company plans to construct a new moving picture theater on Mission street, near 26th, San Francisco. The drawings are now being made in the office of Reid Bros., architects, in the California-Pacific building, San Francisco. Later on the same owners intend to build a number of stores in the same block.

Designs Animal Hospital

Architect Creston H. Jensen, Call building, San Francisco, has completed plans for a two-story reinforced concrete cat and dog hospital to be erected on Fell street, west of Polk, San Francisco, for Drs. Joseph M. Arburua and John Maginnes. Building will cost $30,000.

Flat Building

Plans have been completed by Architect William Gunnison, 57 Post street, San Francisco, for a $12,000 residence flat building to be erected on the south side of Hayes street, near Steiner, San Francisco, for Mrs. V. Staples Pfeiffer.

With the Engineers

Contractors and Engineers Are Not Rivals*

By A. J. McKENZIE, C. E.

THE World War demonstrated clearly that in great battles, success with minimum casualties is achieved in proportion to the degree in which the tactical units from the various branches of the military service, each functioning independently, although along distinct and separate lines, recognize the importance of harmonious co-operation and co-ordination under a clearly defined integral plan of action.

A spirit of rivalry, or perhaps jealousy in some cases, exists normally between the various arms of the service. Yet the knowledge that the fate of each, individually, is indissolubly contained in the success of the entire engagement, impels a deference one to the other, and recognition of the importance of the operations of each.

I am inclined to think that the relation of the engineer and the contractor is analogous. May it not be reasoned that the contractor, with the engineer, constitute the branches of the army in the service of the owner, with the structure as the objective we are to attain. If this is so, and I feel sure it is, the apparent idea exhibited by the public in the past to the effect that the engineer and the contractor should always be kept at daggers' points, in order to insure the owner's protection, is erroneous.

Today it is a well established fact that the interests of the owner are best served when the engineer and contractor co-operate in erecting the best possible structure at the lowest cost, and where there is not the proper co-operation, the engineer, owner and the contractor suffer; the engineer and owner in not getting first class work, and the contractor in increased cost and reduced profits. It shall, therefore, be my purpose to discuss and explain some of the things that I think are misunderstood and can be improved and corrected to the benefit of us all.

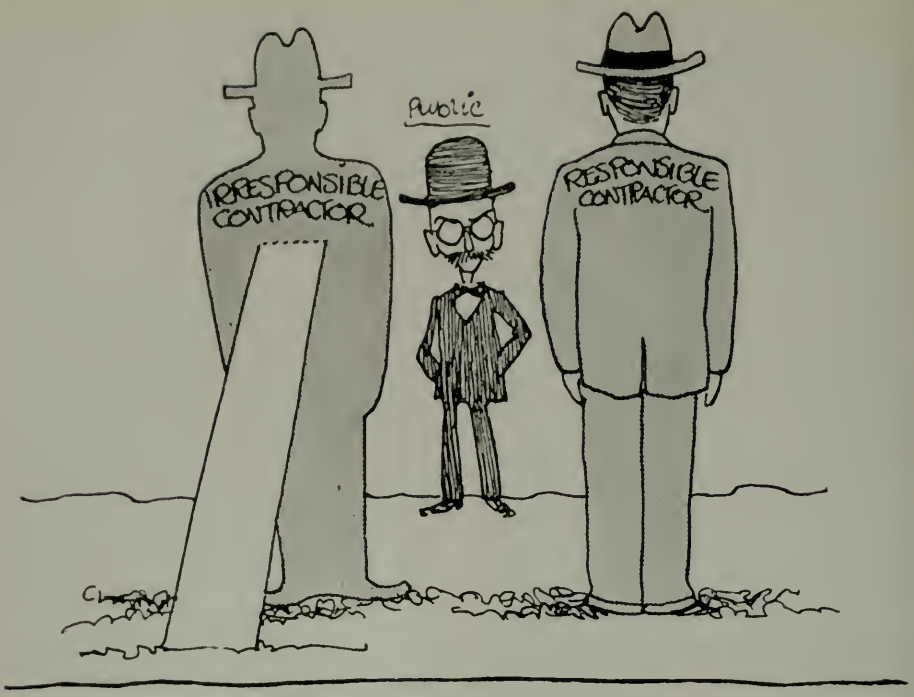
My observation of the engineer, not only from his own viewpoint, but also from that of a contractor, has convinced me that the successful practising engineer and the successful engineering contractor, from the very nature of their work, develop along distinctly different lines. The practising engineer must necessarily be a student of design, which includes a thorough knowledge of the relative strength of materials, economical structural sections, proper arrangements, covering both structural and operating features, and some knowledge of structural beauty. The contractor's problems are quite different. He must first be a thorough student of human nature, by which only will he be able to build up an efficient construction machine or organization. After the organization is developed, he must have the driving qualities of an enterpriser or manufacturer to force his organization to adopt the most economical and efficient methods of construction. Quoting from General R. C. Marshall, general manager of the Associated General Contractors of America: "It is commonly recognized that the two types of minds involved in design and execution of construction are essentially different; one is the artistic or scientific, typified in architects or engineers, and which is seldom able to cope successfully with labor, purchasing of materials, and the less concrete problems of management. The other type is that typified by an enterpriser, such as the contractor or manufacturer, who possesses the aggressive characteristics essential to efficient management."

In other words, the engineer is the designer, while the contractor is the manager, and the services of each are obviously essential to the successful completion of the structure. It is frequently found that a capable designer is not an able manager. The same is true of the managerial temperament; it rarely produces a practical and competent designer. The fact that few engineers, who have followed the profession for any length of time, ever make successful contractors is the best evidence of the truth of the above statement.

Engineering is considered by all as a highly ethical and professional service. Although contracting has not been so considered in the past, it is becoming as highly specialized as any other business or profession.

The successful contractor has ceased to be the agent who simply buys a few materials at random, and picks up the first Mexican or would-be mechanic who comes along, throws the materials together and collects a fee. He must not only be able to accurately interpret and analyze the contract, plans and specifi-

* A paper read before the Texas section of the American Society of Civil Engineers.



DIFFICULT FOR THE PUBLIC TO JUDGE
(From the Constructor)

cations, but he must be thoroughly familiar with developing and handling an organization, the buying of materials, coping with labor problems, providing, and co-ordinating the various elements that go to make up a construction operation. All of which are successfully accomplished only by practical experience, and by practical experience I mean by paying one's own bills for the mistakes one makes. In other words, the knowledge of contracting cannot be obtained by observation and absorption. It is attained only with skill and through integrity and by assuming personal financial responsibility.

When an analysis of the particular training and scope of work covered by the engineer and the contractor and the qualities required in each, is made, the question of an engineer attempting to do work on the day labor basis, without a thoroughly trained construction organization seems almost absurd. Still this practice continues to happen in various parts of the country; usually on account of local politics; occasionally through the misguided idea of some engineer, ignorant of the exigencies of the contracting business, who thinks he can manage actual construction in all of its phases just as well as a general contractor, who has spent his time and money in building up an organization and in meeting the problems involved in economical construction.

I believe it just as reasonable and just as logical for a contractor to attempt to operate on a man for appendicitis, for instance, or to attempt to try his own law suit, as it is for a doctor or a lawyer to assume the role of a general contractor in any line of construction. Would it not be just as reasonable to hold a contractor responsible for the successful recovery of the patient or outcome of the law suit, as it is to attempt to hold a lawyer or a doctor responsible for the successful completion of any construction operation? The actual difference is that the contractor would be put in jail, but the doctor and the lawyer would get by and the owner foot the bill. It is clear there is a distinct field for both the engineer and the contractor, and each should adhere to his own business or profession and respect that of the other

Appointed District Manager

Mr. H. M. Richards has just recently been appointed district manager in charge of the Cleveland district office of The American Rolling Mill Company. For a number of years he was located at the home offices of the company, and in recent years has been attached to the Pittsburgh district office. Mr. J. T. Hagan, of Cleveland, is associated with Mr. Richards in his new work, and the office is now established at 1408 B. F. Keith building.

Field of the Contractor

A Good Roof is None too Good

By J. I. HOLDER,
Engineering Department, The Paraffine Companies, Inc.

"As unto the bow the cord is,
So unto the building is the roof."

THIS bit of perverted plagiarism may at first thought appear to be overdrawn; but is it? Let us carry ourselves back to the "beginning of things." Have you ever tried to picture man's first idea of a home? Lowly man, emerging from his state of obscurity, breaking through the thick clouds of fear, struggling to replace ignorance with reason; is it not logical that his primal instinct charged his budding intellect to first seek a home—a shelter, a place to live?

Whether you accept the Darwinian theory or not, whether the hand of God made man in one moment or in one million years, certain it is that one of man's first problems was a building, and that primarily this self-same building was built for the roof.

How much torture, how many hours man spent groping in his blind way to find the elusive key to his building, his shelter is just a guess. Let us take the liberty of our imaginations. Let us picture man in a storm swept forest seated on a fallen log, laboring with his problems just as earnestly as the architect or engineer of today labors with his conception over the drawing board. The wide, damp forest is chilled with a heavy mist, driven by a biting wind. If only it would turn warmer; if only the wind would stop. Then something happens! His sluggish brain awakens. He has his inspiration, and it is his old-time enemy, the wind, that gives him his idea. Four trees, just stout saplings, but thick with foliage at the top. There they stand forming a perfect little square. Two of them bend gracefully toward the center of the square, held by a broken limb from a nearby tree as it rests against their tiny trunks. The other two are being swayed by the wind to an incline to meet the tops of the first two.

Beneath is a natural shelter, a canopy, a roof; just as long as the wind blows. If he can only make these two wind-swept trees stay in position. But how? Again thought stirs. It is then that the wild grape vine is used to tie the tops together. The next step is to pile thick, heavy, pine and fir boughs all around and on top as high as he can throw them. Behold, his home, his house! And thus the first building was built for the roof.

Whatever your conception of the first building may be the basic idea of the importance of the roof is the same. Carried down through the ages the artistic, aesthetic, and practical minds have struggled with the Byzantine, the Gothic, the Italian, the Spanish, the Mission, the various industrial and other types of architecture and engineering; but behind and beyond it all is the underlying, fundamental principle; that the building is built for a roof.

In our advanced state of architecture and engineering, roofs may properly be divided into two classes—steep surfaces and flat surfaces. Not an eyelash is "batted," not a muscle quivers when the architect or engineer specifies a thirty or forty-dollar per square roof on the steeper surfaces—tile, slate, the hard pressed asbestos shingles—all high class, good materials—good roofs. The owners accept them in most cases even on moderately priced buildings. School boards, colleges and churches have paid for hundreds of thousands of squares. They adorn many residences and stores. The building does not necessarily have to be high class in character for the tile or slate roof.

But what if the roof is flat? Less than a year ago, you would hear, "Twelve and fifteen dollars a square for a roof! Ye gods! We don't need such a good roof. Cut it down." And this even on a Class A building. Little thought was given to the high maintenance cost of the cheap flat roof; less thought to the flashings and connections. Stained walls, discolored tintings, damage to the contents of the building were all swept aside by the insatiable desire to decrease the cost. And yet the same principle holds with the steep roof as with the flat—the building is built for the roof.

Conditions and times, however, are fast changing. The importance of the roof is daily becoming more recognized as being the safeguard of the building itself, and the property it protects within. One frequently hears now that the foundation and the roof are the two vital parts of the building. The factor of safety against leaks, even in the cheaper types of structures justifies the best roof

obtainable. Leaks always cost some one money. The best in flat roofs is never too good. Flat roofs can be built to last thirty years, and carry a guarantee for twenty years, and at a cost of less than one-half the price of tile. Their initial cost is their ultimate cost. As the safeguard of property their economy is apparent.

After all, how little is expended for the roof—the shelter—the protection to everything within the building. Even for one-story garages, stores of Class C type, which carry considerable more roofing area than many other types of structures, the relative cost of the best roofing averages only three to five per cent of the total cost. Office buildings of ten to twelve stories average less than one-half of one per cent of the total cost, for the best roof obtainable. In the light of just this one fact is it really worth while to gamble with a cheap one? Consider that at the beginning of all things, even as now, the building was and is built for the roof.

Model Electric Home

An opportunity for architects, contractors and real estate promotors is described in a booklet just issued by the Lighting Educational Committee which is conducting a national essay campaign, the grand prize of which is to be a $15,000 model electric home. This booklet urges the electrical interests in each community to build and exhibit one of these homes in its community and explains how this can be done.

Indications have been received by the Lighting Educational Committee that several hundred of these homes will be erected in United States and Canada during the next three months. The city that got started first in this campaign, Cleveland, Ohio, has announced that eight of these model electric homes will be erected.

The electrical groups in each city in the United States and Canada are being organized to conduct a contest among school children for better lighting in the home. This campaign, which has been endorsed by national educational organizations, includes the distribution through the schools of a lighting primer to 24,000,000 children, and the publication of lighting lessons in 1200 daily newspapers. The children enter the contest by studying the newspaper lessons and the primer and inspecting the lighting of their own and their neighbors' homes. From the information received they will paste what they think are the correct lighting fixtures in pictures of rooms in the model homes shown in the primer and write an essay on the best way to better light their own, and two neighbors' homes.

The pasted primer and the essay will be submitted to judges in their own towns and local prizes will be given to a number of best plans. Then the winner from all of the communities in United States and Canada will have their plans entered in the national contest. The first prize will be the $15,000 Model Electric Home, and a number of other prizes of scholarships will be given.

Readers of this magazine who are interested should get in touch with electrical men in their home town or write to the Lighting Educational Committee, 680 Fifth avenue, New York City.

Passing of Noted Electrical Man

Mr. Benjamin G. Lamme, chief engineer of the Westinghouse Electric and Manufacturing Company, and one of the world's leading electrical authorities, after a lingering illness of several months, died at his home, 230 Stratford street, East Liberty, Pa., where he lived with his sisters, Miss Florence A. Lamme and Miss Lena G. Lamme.

George Westinghouse, with whom Mr. Lamme was closely associated until Mr. Westinghouse's death, had perfected the alternating current system, by which electricity could be transmitted over great distances economically. Mr. Lamme then perfected railway and industrial motors and synchronous converters to make this alternating current useful at any point, and thus the use of electricity was removed from small, restricted areas and its use made universal.

His most spectacular achievements were the designing of generating equipment for the World's Fair in Chicago in 1892; 5000 h.p. generators, a world's record at the time, when Niagara Falls was first harnessed for waterpower and generating and motor equipment for the first big railway electrification.

Flat Finish for Floors

The Minwax Company of New York has recently published several small booklets that will interest architects and contractors. One of these describes in detail the Minwax Flat Finish for floors, interior trim and woodwork of all kinds. Minwax Flat Finish is a combination of carefully refined oils, combined and blended with a high percentage of superior grade waxes. It is a clear finish that in no way discolors the surface.

Another booklet describes the membrane system of waterproofing. The booklet, entitled "Bridge Waterproofing" will interest architects and engineers who plan bridge construction. Over fifty bridges and viaducts where Minwax has been used are illustrated. These booklets may be obtained from K. M. Hayden, 22 Battery street, San Francisco or W. C. Lea, 653 South Clarence street, Los Angeles.

Suggested Solution of Los Angeles Traffic Problems

A COMPREHENSIVE plan for solution of Los Angeles traffic problems has been submitted by the committee of city planning experts, composed of Messrs. Frederick Lee Olmsted of Brookline, Mass., Harland Bartholomew of St. Louis, Mo., and Charles H. Cheney of Long Beach. By continuous study, alone, says the committee, can the constantly changing conditions be satisfactorily overcome, and to this end the appointment of a permanent committee of citizens was recommended to carry on the planning work. A budget of not less than $100,000 for the first three or five years and a sufficient amount thereafter to continue the work were suggested. The report was accepted on behalf of the city by Acting Mayor Boyle Workman and is now in the hands of the city council to provide the means for carrying out the committee's recommendations.

Remedies for the traffic situation are classed under six separate heads as follows:

Regulation to obtain maximum capacity of existing space by prohibiting parking, obstructive turns, ranking of vehicles and eliminating unnecessary movements.

Separation of classes of traffic.

Improvement of street plan, elimination of jogs and dead ends and creation of distributor and pass streets for business districts and radial thoroughfares for outlying districts.

Extension of major street plan to whole metropolitan district and completion of boulevard and parkway system.

Readjustment of steam railroad terminals and elimination of grade crossings.

Provision for mass transportation by subways and rapid transit lines.

The street plan itself is discussed under the following six topics: Distributor streets, radial thoroughfares from central business district, interdistrict thoroughfares, business district improvements, truck-hauling thoroughfares and parkways and boulevards for passenger automobiles.

Under the heading of distributor streets, the plan names Figueroa, First, Maple and Washington, and possibly a street to be opened between Sixth and Seventh streets to prolong Wilshire boulevard into the business district. A width between buildings of 150 feet is suggested for those thoroughfares.

For radial thoroughfares from the central business district, Glendale boulevard, South Figueroa, Broadway and connecting streets to the north and south, Main street and connecting streets, are listed as a basis from which other needed traffic ways can be developed.

Other proposed radial thoroughfares of major importance are the Inglewood-Redondo boulevard, the extension of the Pacific boulevard route from Long Beach into Adams street, and a new radial thoroughfare to the north from Olive street through Elysian Park by tunnel and viaduct to a connection with Dayton street, and the proposed Arroyo Seco boulevard at San Fernando road. New or improved radial thoroughfares of considerable importance and involving less difficult and costly construction are Third street, Pico and Washington to the west, Chavez-Racine road and Fletcher-Glassell avenue to the north, East Eighth to Hollenbeck avenue, the new Valley boulevard route, Holabird avenue and Bandini boulevard to the east.

For interdistrict thoroughfares the report suggests a parallel highway to Los Feliz road between Normandie avenue and Riverside drive, feeding traffic between Hollywood, Glendale, Eagle Rock and Pasadena. A widening and extending of Manchester avenue is proposed and the opening of a new street to be known as Eastern avenue and to provide direct connection between Pasadena and Long Beach traffic which now passes through the downtown district.

Two thoroughfares, each just outside, are suggested for the traffic that now passes through the central business district. These are Fremont street extension, to connect with North Broadway near Berendo, follow the line of new Depot street from College to Alpine, use North Figueroa for a short distance, connecting with Francisco and thence southward, terminating at Hoover and Exposition boulevard and San Pedro street, extended northward to connect with Date street and to a new bridge across the Los Angeles river connected with Mozart at North Main.

Concentration of car lines to the following east-west streets is recommended: First, Third, Sixth, Seventh, Ninth, Eleventh, Pico, Seventeenth and Washington. Clearing of tracks from Second, Fourth, Fifth, Eighth, Tenth, Figueroa, Olive, Los Angeles and Maple are other proposals. General widening of the principal thoroughfares is also suggested.

Truck-hauling thoroughfares must be numerous as industrial development proceeds, the report states, and suggests: Creation of at least one wide and direct thoroughfare from the harbor into the warehouse district—Santa Fe avenue being proposed—and the minimum width set at 94 feet between curbs. Another truck highway would be the proposed River Truck Speedway, a direct connection between San Fernando Valley through the industrial districts to the

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harbor. A third trucking route would follow the edge of the flat at the base of Boyle Heights Bluff, passing under the main east and west streets, and would connect with the River Truck Road south of Aliso.

For parkways and scenic roads—limited to automobile traffic only—the report proposes Wilshire boulevard west of Crenshaw boulevard, the Hollywood-Palos Verdes parkway via Cypress avenue, Mesa drive, Crenshaw boulevard and Cahuenga avenue; Los Feliz boulevard and Franklin avenue; Riverside drive; Silver Lake parkway and Arroyo Seco parkway.

Fine Homes of Indiana Limestone

"Distinctive Houses of Indiana Limestone" is the title of a fifty page booklet just off the press for the Indiana Limestone Quarrymen's Association, Bedford, Ind. The booklet is a masterpiece of half-tone engravings printed in duo-tone on book paper. Included in the fifty pages are exterior and interior illustrations with descriptive matter of the W. K. Vanderbilt, Jr., residence, New York City; the I. W. Bowen residence, Detroit; the H. L. Pratt house at Glen Cove, Long Island; the D. B. Jones residence, Washington, D. C., and the Italian Embassy in the same city. Every residence illustrated is what might be termed a show-place. In addition there is a page of beautiful Indiana Limestone mantels, and many reproductions of interiors, a typical quarry scene at Bedford and numerous illustrations showing the combined use of Indiana Limestone with brick as a decorative material. This booklet is one of the most pretentious issued by the association, and one that should find a place in the files of every architect who specializes in residential designing.

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THOS. J. COLEMAN

Honor Awards" for Architecture in Southern California

The ARCHITECT & ENGINEER

SEPTEMBER 1924

Published in San Francisco
50 cents a copy - $2.50 a year

No Seconds

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Published Monthly by
THE ARCHITECT and ENGINEER Inc.
626-627 Foxcroft Building-San Francisco
W. J. Kierulff, *President* Frederick W. Jones, *Vice-President* L. B. Penhorwood, *Secretary*

WITMER APARTMENTS, LOS ANGELES
WITMER AND WATSON, ARCHITECTS

Frontispiece
The Architect and Engineer
September, 1924

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THE ARCHITECT AND ENGINEER

SEPTEMBER
1924

VOL. LXXVIII
No. 3

In the following pages are views of buildings in Los Angeles and vicinity which have been adjudged worthy of Honor Awards by the Southern California Chapter, American Institute of Architects. Each year a jury of distinguished architects, non-residents of Los Angeles, is invited to pass judgment on completed work in the southern part of the state. Owner, architect and contractor of each structure is recognized for his respective part in the building. It is a fine way to encourage better architecture and better construction and the plan might well be followed by Chapters in the other Coast cities.

Southern California Architecture Given Recognition

AN event of general interest throughout the building and architectural world, and now an annual activity of the Southern California Chapter of the American Institute of Architects, is the granting of Certificates of Honor to architects, owners and contractors who have produced the best examples of architecture in the various classes of structures during the year. The consideration, judgment and award are conducted with due publicity and importance. In preparation for this contest a carefully devised program is circulated, defining the rules and the different major classifications for the various awards. It is required that the location of the building, the name of the architect, the owner and the contractor be submitted each year. These programs and the information regarding the Honor Awards inviting nominations are widely distributed. A jury is chosen, consisting of distinguished architects outside the jurisdiction of the Chapter, and many days are spent in careful consideration, first of the photographs, and second of the actual buildings before making a report. The jury for 1924 comprised Messrs. John Galen Howard and Ernest Coxhead of San Francisco and William E. Parsons of Chicago.

Following the recommendations of the jury, the award is made with due ceremony at a meeting of the Chapter to which the successful entrants are invited. It has been a matter of gratification to those who have followed the working out of this problem that the owners have shown great pride when their efforts have been recognized in this way and most particularly the contractors who have received awards have displayed marked appreciation of the honor conferred on them. The awards for 1923 follow:

M. L. H. WALKER RESIDENCE, PASADENA
E. W. NEFF, ARCHITECT

RESIDENCE OF CARLETON M. WINSLOW, LOS ANGELES
CARLETON M. WINSLOW, ARCHITECT

RESIDENCE OF MR. K. C. STRONG, SANTA BARBARA
JOHNSON, KAUFMANN & COATE, ARCHITECTS

REGINALD D. JOHNSON RESIDENCE, PASADENA, CALIFORNIA
JOHNSON, KAUFMANN & COATE, ARCHITECTS

HOUSE OF MRS. LYNN HELM, LOS ANGELES
WITMER AND WATSON, ARCHITECTS

GEORGE S. HUNT RESIDENCE, LINDA VISTA, CALIFORNIA
MARSTON, VAN PELT & MAYBURY, ARCHITECTS

H. C. WHEELER RESIDENCE, HOLLYWOOD, CALIFORNIA
WITMER AND WATSON,
ARCHITECTS

GEORGE S. HUNT RESIDENCE, LINDA VISTA, CALIFORNIA
MARSTON, VAN PELT & MAYBURY, ARCHITECTS

RESIDENCE OF MR. F. E. LEUPP, PASADENA, CALIFORNIA
JOHNSON, KAUFMANN & COATE, ARCHITECTS

HOME COMMERCIAL AND SAVINGS BANK, SOUTH PASADENA
EDWIN BERGSTROM, ARCHITECT

WEST WING, PASADENA HOSPITAL, PASADENA, CALIFORNIA
MYRON HUNT AND H. C. CHAMBERS,
ARCHITECTS

JUNIPERO SERRA SCHOOL, PASADENA
CYRIL BENNETT, ARCHITECT

THORPE BUILDING, LOS ANGELES, CALIFORNIA
MORGAN, WALLS & CLEMENTS, ARCHITECTS

DETAIL FACADE, THORPE BUILDING, LOS ANGELES
MORGAN, WALLS & CLEMENTS, ARCHITECTS

F. H. CASE RESIDENCE, EAGLE ROCK, CALIFORNIA
Horbin F. Hunter, Architect

WASHINGTON JUNIOR HIGH SCHOOL, PASADENA
Allison and Allison, Architects

DETAIL OF OJAI VALLEY COUNTRY CLUB
WALLACE NEFF, PASADENA ARCHITECT

MAGNIN SHOP, HOLLYWOOD, CALIFORNIA
MYRON HUNT & H. G. CHAMBERS, ARCHITECTS

MORRIS STORE AND OFFICE BUILDING, PASADENA
MARSTON, VAN PELT & MAYBURY, ARCHITECTS

Mrs. Lynn Helm Residence, Los Angeles. Witmer and Watson, Architects. T. C. Youngs, Contractor.

George S. Hunt Residence, Linda Vista. Marston, Van Pelt & Maybury, Architects. John H. Simpson, Contractor.

F. H. Case Residence, Eagle Rock, Calif. Harbin F. Hunter, Architect. Birch O'Neal, Contractor.

Carleton M. Winslow Residence, Los Angeles. Carleton M. Winslow, Architect. Harold E. Phillips, Contractor.

F. E. Leupp Residence, Pasadena. Johnson, Kaufmann & Coate, Architects. Hansen & Son, Contractors.

M. L. H. Walker Residence, Pasadena. E. W. Neff, Architect. A. Carpenter & Son, Contractors.

U. S. POST OFFICE GARAGE, LOS ANGELES
A. C. Zimmerman, Architect

Reginald D. Johnson Residence, Pasadena. Johnson, Kaufmann & Coate, Architects. John Mayer, Contractor.

K. C. Strong Residence, Santa Barbara. Johnson, Kaufmann & Coate, Architects. Snook & Kenyon, Contractors.

H. C. Wheeler Residence, Hollywood. Witmer & Watson, Architects. A. E. Westberg, Contractor.

Apartments owned by Witmer Brothers Co., Los Angeles. Witmer & Watson, Architects. John V. Gierding, Contractor.

Ojai Valley Country Club, Ojai, Calif. E. W. Neff, Architect. A. Carpenter & Son, Contractors.

Thorpe Building, 7th and Parkview streets, Los Angeles. Morgan, Walls & Clements, Architects. Robert Millsap, Contractor.

Magnin Shop, Hollywood Boulevard, Hollywood. Myron Hunt & H. C. Chambers, Architects. MacDonald & Kahn, Contractors.

U. S. Postoffice Garage, Los Angeles. A. C. Zimmerman, Architect. Wm. A. Larkins, Contractor.

G. L. Morris Store and Office Building, 25 S. Euclid Avenue, Pasadena. Marston, Van Pelt & Maybury, Architects. W. A. Taylor, Contractor.

Home Commercial & Savings Bank, South Pasadena. Edwin Bergstrom, Architect. Wm. A. Larkins, Contractor.

West Wing, Pasadena Hospital, Pasadena. Myron Hunt & H. C. Chambers, Architects. Wm. Crowell, Contractor.

George Washington Junior High School, Pasadena. Allison & Allison, Architects. Anton Johnson Co., Contractors.

Junipero Serra Grammar School, Pasadena. Cyril Bennett, Architect. H. E. Tabor, Contractor.

Makes Survey of Construction Industry

The National Industrial Conference Board has just made public the result of a nation-wide survey of the construction industry, which shows that the general trend of building costs, taken as a whole, is a tendency downward for materials, and a rising tendency in wages. The report shows that in the trades, plasterers and bricklayers receive the bulkiest pay envelopes in practically all cities. Bricklayers get $1.25 an hour in 50 cities, and plasterers the same amount in 44 cities. Masons get $1.25 an hour or more in 28 cities, lathers in 12 cities, hoisting engineers in seven cities, and roofers in four.

The following chart compiled by the Board shows the minimum and maximum rates as well as the average:

WAGES OF BUILDING LABOR
Cents per Hour—January, 1924

	Minimum	Average	Maximum
Plasterers	112.5	145.5	175.0
Bricklayers	112.5	133.3	175.0
Stone masons	100.0	133.2	150.0
Marble setters	92.5	120.6	131.3
Structural iron workers	75.0	117.4	137.5
Tile layers	87.5	117.1	130.0
Plumbers	81.3	115.3	131.3
Electricians	81.3	115.3	125.0
Carpenters	70.0	107.2	125.0
Sheet metal workers	77.5	105.3	125.0
Painters	62.5	103.9	125.0
Cement finishers	70.0	102.8	125.0
Plasterers' helpers	40.0	97.8	106.3
Hod carriers	37.5	90.1	125.0
Steamfitters' helpers	25.0	72.7	87.5
Building laborers	27.5	64.9	90.6

* * * *

Wall Paper Gives Illusions

Wall paper manufacturers in issuing their aids to housewives and interior decorators have called attention to the wonderful powers of illusion concealed in the design of wall paper. Paper with a small pattern will make the furniture and fixtures of the room look much larger than they actually are, and a large pattern paper will do just the opposite.

BUILDING FOR SEATTLE CHAMBER OF COMMERCE, SEATTLE, WASHINGTON
HARLAN THOMAS AND SCHACK YOUNG & MYERS, ASSOCIATED ARCHITECTS

DESIGN FOR APPROACHES TO BRIDGE, SEATTLE, WASHINGTON
Jas. D. Blackwell, City Engineer
A. H. Albertson, Edgar N. Blair and Harlan Thomas, Consulting Architects

The Seattle Architectural Exhibition

By CHARLES H. ALDEN, F. A. I. A.*

THE recent Architectural Exhibition of the Washington State Chapter of the American Institute of Architects was somewhat of a contrast in size, scope and presentation to those held by the Chapter in former years, and while it did not present the effective display previously attempted and usually considered necessary to put an architectural exhibition over, the exhibits, although comparatively few in number, had distinct architectural value and the lack of the usual exhibition accessories was in a certain way instructive.

The work of the architect being a completed building, it is a question how much the architectural exhibition should include in the way of accessories and other exhibits not directly associated with a completed building, and whether we are departing too much from the true function of the architect in displaying so many varied pictorial presentations of architectural schemes, which may or may not solve a building problem. It is also a question whether the various accessories in the form of building material and attempts at landscaping with other architectural embellishments are in many instances logically placed in an architectural exhibition, as these on account of the environment cannot be exhibited in a true architectural manner in proper conformity to surroundings. Furthermore, the variety of material displayed and the necessity

*During the World War, Mr. Alden was active in the construction of Camp Lewis in Washington and also in camps overseas. He is now Lieutenant-Colonel in the Construction Service Quartermaster Officers' Reserve Corps. For two years Mr. Alden was President of the Washington State Chapter of the American Institute of Architects and afterwards served on the Board of Directors of the Institute. During the Panama-Pacific Exposition in San Francisco he was on the Staff of the Division of Works. He was also actively connected with the Alaska Yukon Pacific Exposition held in Seattle in 1909, opening his office in Seattle immediately thereafter for the practice of his profession.

felt to make the display effective has lead to methods of financing, which have involved exhibition managements in disturbing questions as to the ethics involved.

This Exhibition of the Washington State Chapter, while it may have appeared somewhat disappointing in its size and lack of display features, was distinctly free from any of the grounds for criticism we have mentioned. Miniature garden effects and similar embellishments in former times ingeniously and effectively arranged, were entirely absent. If for no other reason, the limited space available for the Exhibition did not permit them. The exhibition needed no financing whatever. The Seattle Fine Arts Society, in whose gallery the exhibition was held, adequately cared for its housing and there was no cost involved other than that of each individual architect in the preparation of his exhibit.

When the visitor had accustomed himself to the lack of usual display generally felt to be necessary and became interested in the architectural value of the different exhibits offered, he found material well worth his attention. There were masterful renderings of ambitious problems in design, commercial buildings with real architectural expression, residence work, not only of a monumental character, but exhibits showing how architecture can be satisfactorily applied to the smallest home. Besides photographs and rendered drawings, the presentation of an architectural project by means of a model was displayed and the only "accessory," a beautiful example of craftsmanship in ornamental plaster, was perhaps all the more effective on account of the lack of other accessories.

To mention the exhibits more in detail, of the more ambitious designs, Mr. Osborne's "Sanctuary of our Sorrowful Mother," with its seven chaplets is very notable, both in design and rendering. This was originally planned and designed for the Servite Fathers of Portland, Oregon, on a position near the junction of the Columbia and Willamette rivers. It will now be built on a more advantageous site on the top of "Rocky Butte," a precipitous cliff some 150 to 200 feet in height commanding magnificent views and calling for some alterations in the design and alignment of subsidiary chapels and buildings than that shown on the drawing.

The over-all measurements of the building will be approximately 300 by 700, with two 350 foot towers. It is proposed to construct the edifice out of the rock on which it is built, the interior being finished in marble, tile and mosaics. The building will be unique in many respects and is the first of its kind to be erected in the United States.

Another interesting example in design and rendering is the proposed Natatorium for Vancouver, B. C., by the same architect. This design, to be executed with stucco walls, terra cotta trim and bronze metal sash, contains a large pool with galleries around three sides, with dressing rooms and other accessories suitable for a building of this character. Mr. Osborne also exhibits the Charlesgate Apartments, a modern apartment house in an adaptation of Tudor gothic with all practical requirements provided for in a pleasing architectural manner.

The Campbell building and building for the Puget Sound Realty Company by Schack, Young and Myers, show how business buildings may not suffer commercially when designed in a worthy architectural manner. Is it too optimistic to say that commercial interests generally

SEATTLE NATIONAL BANK, SEATTLE, WASHINGTON
Doyle and Merriam, Architects

INTERIOR, SEATTLE NATIONAL BANK
Doyle and Merriam, Architects

are beginning to realize that business buildings architecturally designed by the best architects are the best commercially? A fact well recognized by some of our ablest business men and financiers.

The exhibition contains one example of a civic building, if a privately owned building for the Seattle Chamber of Commerce may be so designated. It is at least to serve a civic purpose and is given a unique and most interesting architectural expression by its architects, Harlan Thomas, collaborating with Schack, Young and Myers. The building for the Seattle National Bank by Doyle and Merriam is an interesting building of civic character, hardly given justice in the illustration, which does not show its refined and carefully executed detail.

Well designed residence work always gives an interesting character to an exhibition and this exhibition gives a pleasing variety from the formal residence of Mr. and Mrs. J. H. Ballinger at The Highlands,

BASEMENT PLAN

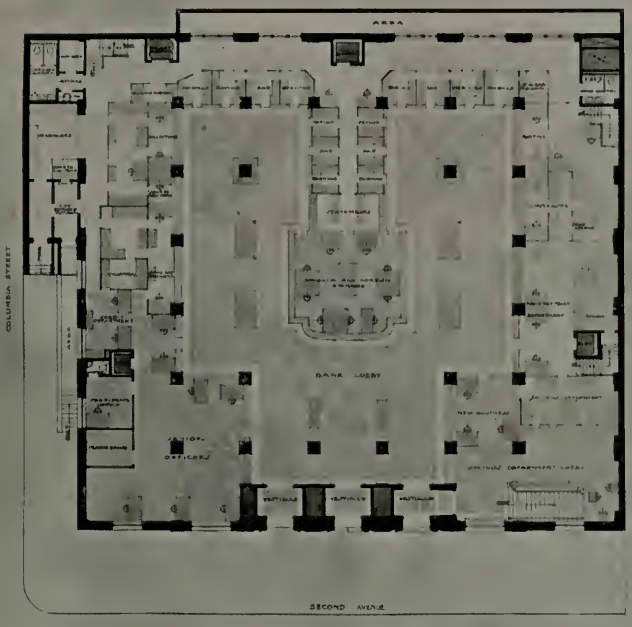
SEATTLE NATIONAL BANK, SEATTLE, WASHINGTON
Doyle and Merriam, Architects

Seattle, through various other designs expressed in a more or less picturesque manner to the simple cottage and bungalow. Besides the Ballinger residence, Mr. Ford, the architect, shows another residence less formal in character, and Messrs. Ivey and Holmes show by sketch plans and rendered elevations several interesting examples of residence design.

In small residence work, which does not usually attract the architect but is of very considerable interest to many home owners, it would be hard to find a more charming design than the bungalow by Morrison and Stimson, the plans of which are now available to the public through the North Pacific Division of the Architects' Small House Service Bureau. This organization, "non-profit making," as it declares in its an-

nouncement, exists for the purpose of getting real architectural service available to the builder of the small home. It is a pleasing commentary on the public's architectural taste that this charming design of Morrison and Stimson, "5-E-1," of the North Pacific Division of the Bureau, has resulted in widely scattered inquiries from all sections of the country. Houses are being built from these plans in many remote sections of the United States.

Another interesting example of the architectural stock plan displayed at the exhibition, is a design for a farm house. This design was the result of a competition held by the Extension Division of the Washington State College open to the farm women of the state to secure their ideas as to the best solution of the farm house plan. Exterior designs from these prize winning plans are being made by the Washington State



FIRST FLOOR PLAN

SEATTLE NATIONAL BANK, SEATTLE, WASHINGTON
Doyle and Merriam, Architects

Chapter of the Institute and the interesting result at this exhibition gives promise of a real service to the farmer.

Work of a public character in a different field is displayed in the design for the approaches to the Montlake bridge in Seattle. Very generally these conspicuous civic structures which should be architectural monuments, are left as bare expressions of engineering, without any attention being given to aesthetic effect. Fortunately for Seattle, the City Engineer, recognizing the value to the people of an architectural expression to the utilitarian requirements of this bridge, secured, through the co-operation of a committee of architects, this handsome design recalling in architectural character the State University buildings to which the bridge is to form an important approach.

TRINITY CHURCH, EVERETT, WASHINGTON
E. T. Osborn, Architect

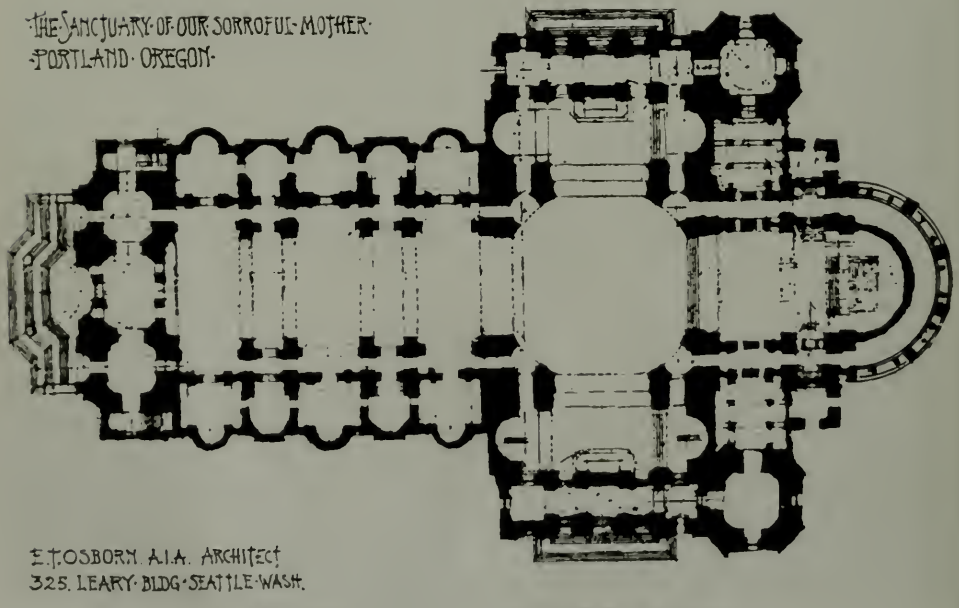
Passing to our architectural model, this illustrates the proposed Mt. Baker Presbyterian Church, Seattle, and is an effective expression of a thoroughly commendable architectural design.

The one example of the work of the craftsman is a beautiful panel illustrating what can be done through the medium of ornamental plaster in so-called "Scrafitto." This contribution is the work of Louis Gluck, who has for some time been directing his abilities as a worker in plaster towards this particular form of aesthetic expression. It is a satisfaction to note that Mr. Gluck's ability and earnestness of purpose has been recognized by the State of Oregon in the awarding of a medal indicating his membership in the Guild established by the Oregon Association of Building and Construction.

TRINITY CHURCH, EVERETT, WASHINGTON
E. T. Osborn, Architect

NATATORIUM, VANCOUVER, B. C.
E. T. Osborn, Architect

SANCTUARY OF OUR SORROWFUL MONTHER, PORTLAND
E. T. Osborn, Architect



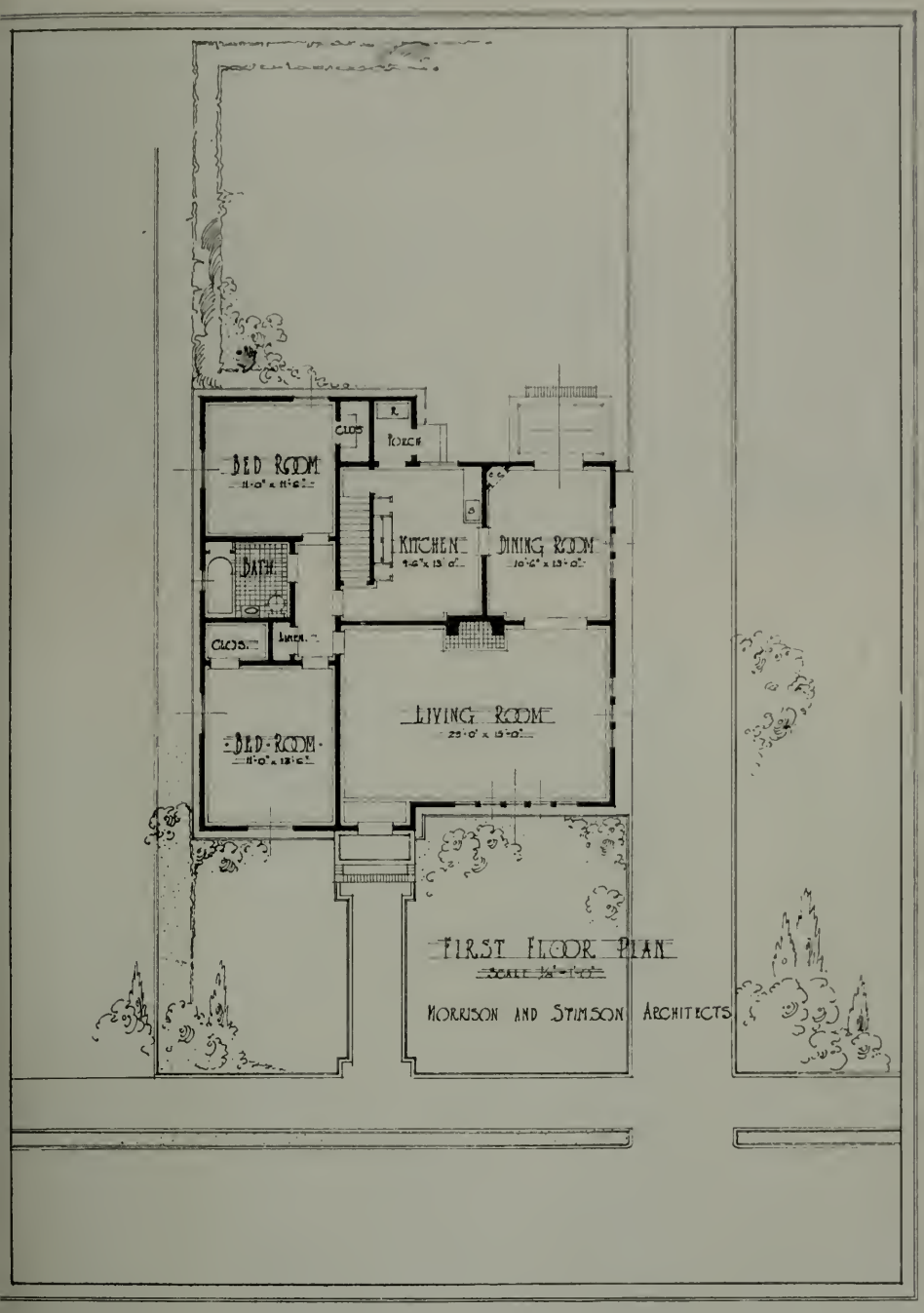
PLAN, SANCTUARY OF OUR SORROWFUL MOTHER
E. T. Osborn, Architect

CAMPBELL BUILDING, SEATTLE, WASHINGTON
Schack, Young & Myers, Architects

BUILDING FOR PUGET SOUND REALTY ASSOCIATES, SEATTLE
Schack, Young & Myers, Architects

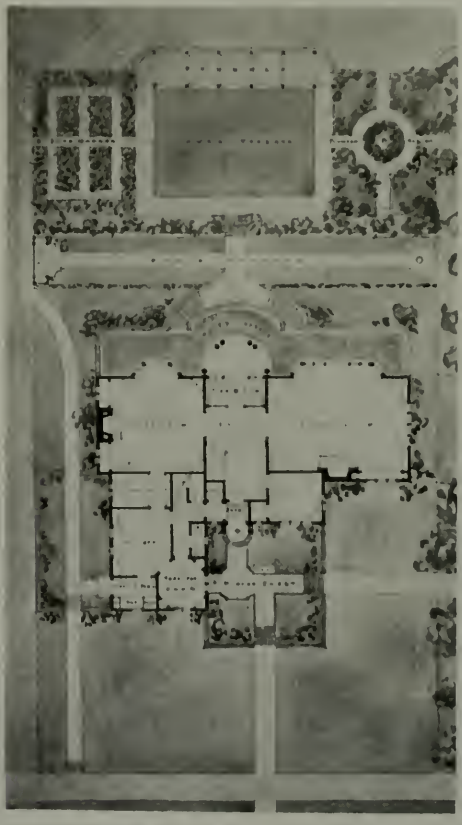
RESIDENCE FOR MR. CHAS. F. BOYCE, SEATTLE
Charles H. Alden, Architect

DESIGN FOR SMALL HOUSE SERVICE BUREAU, SEATTLE
Morrison and Stimson, Architects



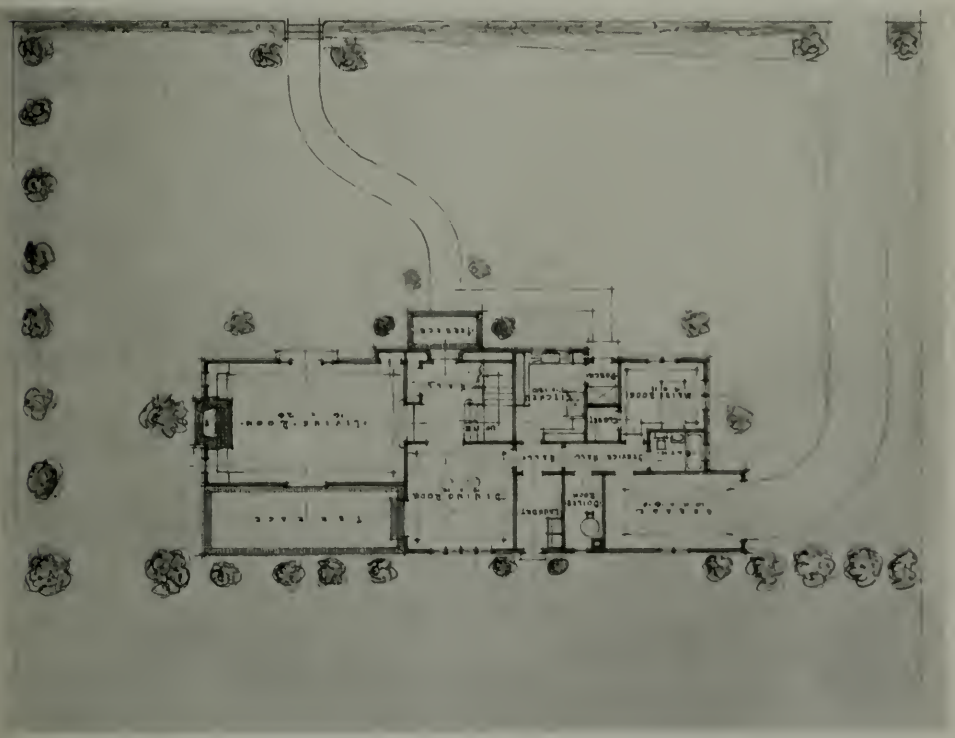
PLAN FOR SMALL HOUSE, SEATTLE
MORRISON & STIMSON, ARCHITECTS

RESIDENCE FOR MR. J. N. DONOVAN, BELLINGHAM
J. Lister Holmes, Architect



PLOT PLAN, RESIDENCE FOR MR. J. N. DONOVAN, BELLINGHAM
J. Lister Holmes, Architect

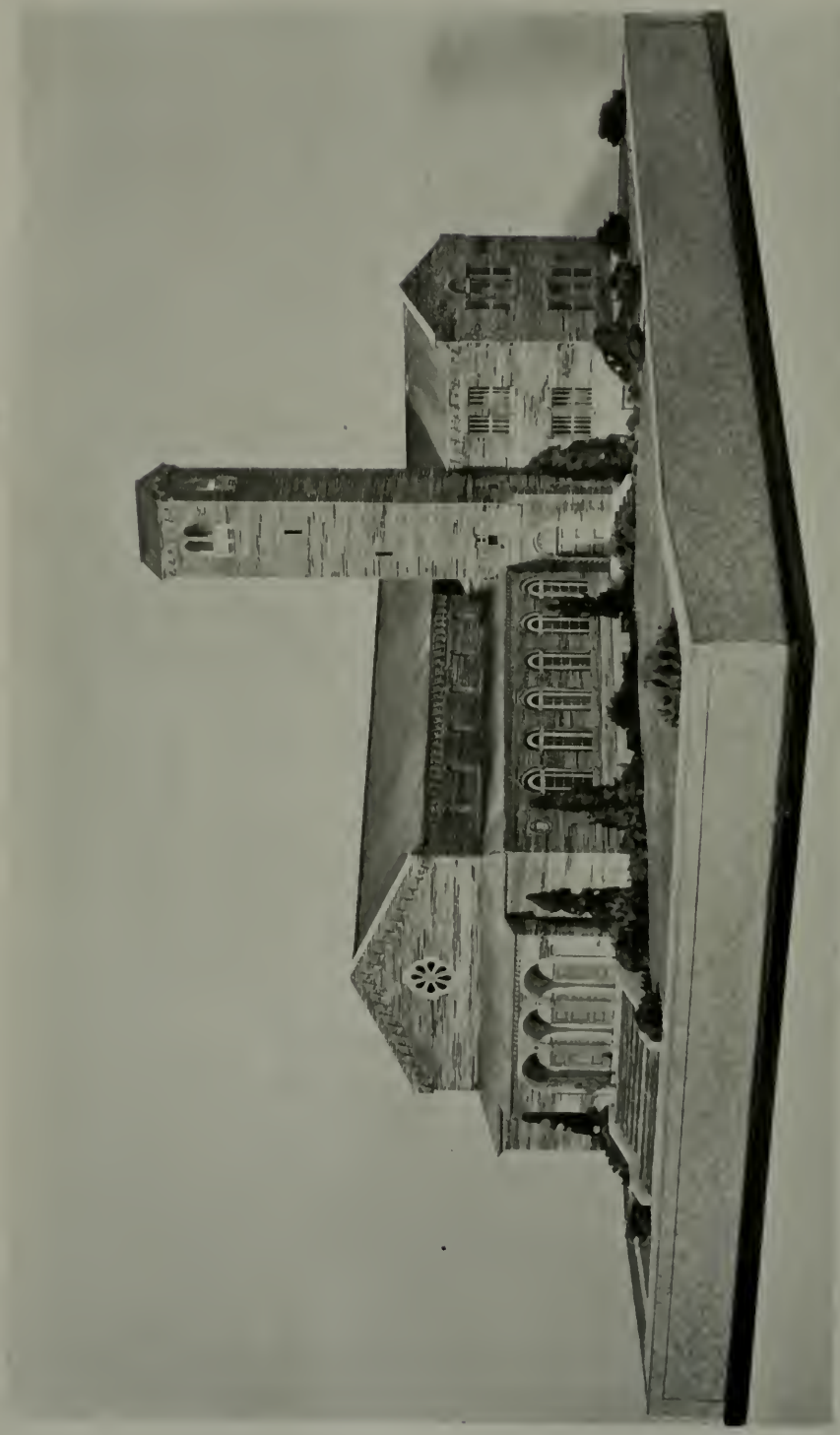
RESIDENCE FOR MR. S. T. STAFFORD, SEATTLE
J. Lister Holmes, Architect



PLAN, RESIDENCE FOR MR. S. T. STAFFORD, SEATTLE
J. Lister Holmes, Architect

RESIDENCE OF MR. J. H. BALLINGER, SEATTLE
SHERWOOD D. FORD. ARCHITECT

RESIDENCE OF MR. J. H. BALLINGER, SEATTLE
SHERWOOD D. FORD, ARCHITECT



MODEL, MT. BAKER PRESBYTERIAN CHURCH
A. H. ALBERTSON, ARCHITECT

CHARLES GATE APARTMENTS, SEATTLE
E. T. OSBORN, ARCHITECT

MODEL, PACIFIC TELEPHONE & TELEGRAPH BUILDING, SAN FRANCISCO
J. R. Miller and T. L. Pflueger, Architects. A. A. Cantin, Associate

San Francisco's Tallest Building

ON this and the next page are two views of the new twenty-six-story office building of the Pacific Telephone and Telegraph Company under construction in San Francisco by Lindgren & Swinerton, Inc., from plans by Architects J. R. Miller, T. L. Pflueger and A. A. Cantin. One of the views is from a model and the other is a composite picture of model and photograph of other buildings now standing in the same block. It is a clever piece of camouflage and has every appearance of a genuine photograph of the completed structure. The building is expected to be ready for occupancy in July, 1925, at a cost of $3,000,000.

The designers state that while a first glance gives the impression of Gothic architecture, the building by no means follows that style. Its facade is merely a cloak for the great pile of steel and concrete, expressing on the face the sinews within.

ARCHITECTS' CONCEPTION OF PACIFIC TELEPHONE BUILDING WHEN COMPLETED
J. R. Miller and T. L. Pflueger, Architects. A. A. Cantin, Associate

The building has a frontage of 160 feet on New Montgomery street and 147 in Minna and Natoma streets. An "L" shape plan is being executed, but provision has been made for future additions.

The new skyscraper will be the largest building on the Pacific Coast devoted to the exclusive use of one concern, having 280,000 square feet of floor space. A women's cafeteria will be allotted space on the twenty-second floor, while an assembly hall and library will be provided on the twenty-sixth floor with a promenade and recreational space features of the roof area.

Nine highspeed elevators, storage space for automobiles, all the latest ideas in lighting and last-minute improvements towards welfare and comfort will be embodied in the skyscraper.

Modern Architecture*

By THOMAS HASTINGS, Architect

WE American architects are ofttimes confronted with the question why we have not an architecture of our own—one which is essentially American; and why it is that so many of us who have studied in Paris seem inclined to inculcate the principles of the Ecole des Beaux Arts into our American architecture. The majority of people do not seem to realize that in solving the problems of modern life the essential is not so much to be national, or American, as it is to be modern, and of our own period.

The question of supreme interest is: What influence has life in its different phases upon the development of architectural style? Style in architecture is that method of expression in the art which has varied in different periods, almost simultaneously throughout the civilized world, without reference to the different countries, beyond slight differences of national character, mostly influenced by climate and temperament.

Surely modern architecture should not be the deplorable creations of the would be style inventors, the socialists who have penetrated the world of art farther than they have the world of politics, who are more concerned in promulgating an innovation than in establishing a real improvement—so-called Futurists, New Thinkers, Cubists, art nouveau followers, all unrelated to the past without thought of traditions. No more should modern architecture be the work of the illogical architect, living in one age and choosing a style from another, without rhyme or reason, to suit his own fancy or that of his client.

The important and indisputable fact is not generally realized that from prehistoric times until now each age has built in one, and only one, style. Since the mound builders and cave dwellers, no people, until modern times, ever attempted to adapt a style of a past epoch to the solution of a modern problem. In such attempts is the root of all modern evils. In each successive style there has always been a distinctive spirit of contemporaneous life from which its root drew nourishment. But in our time, contrary to all historic precedents, there is this confusing selection from the past. Why should we not be modern and have one characteristic style expressing the spirit of our own life? History and the the law of development alike demand that we build as we live, according to our means.

One might consider the history and development of costumes to illustrate the principle involved. In our dress today we are modern, but insufficiently related to the past—which we realize when we look upon the portraits of our ancestors of only a generation ago. We should not think of dressing as they did, or of wearing a Gothic robe or a Roman toga; but, as individual as we might wish to be, we should still be inclined, with good taste, to dress according to the dictates of the day.

The irrational idiosyncrasy of modern times is the assumption that each kind of problem demands a particular style of architecture. Through prejudice, this assumption has become so fixed that it is common to assume that if building a church or a university we must make it Gothic; if a theater, we must make it Renaissance. One man wants an Elizabethan house, another wants his house early Italian. With this state of things, it would seem as though the serious study of character were

*An address delivered before the Royal Institute of British Architects.

no longer necessary. Expression in architecture, forsooth, is only a question of selecting the right style.

The two classes with which we must contend are, on the one hand, those who would break with the past, and, on the other, those who would select from the past according to their own fancy.

Style in its growth has always been governed by the universal and eternal law of development. If from the early times, when painting, sculpture and architecture were closely combined, we trace their progress through their gradual development and consequent differentiation, we cannot fail to be impressed by the way in which one style has been evolved from another. This evolution has always kept pace with the progress of the political, religious and economic spirit of each successive age. It has manifested itself unconsciously in the architect's designs, under the imperatives of new practical problems, and of new requirements and conditions imposed upon him. This continuity in the history of architecture is universal. As in nature the types and species of life have kept pace with the successive modifications of lands and seas and other physical conditions imposed upon them, so has architectural style in its growth and development until now kept pace with the successive modifications of civilization. For the principles of development should be as dominant in art as they are in nature. The laws of natural selection and of the survival of the fittest have shaped the history of architectural style just as truly as they have the different successive forms of life. Hence the necessity that we keep and cultivate the historic spirit, that we respect our historic position and relations, and that we realize more and more in our designs the fresh demands of our time, more important even than the demands of environment.

What determining change have we had in the spirit and methods of life since the revival of learning and the Reformation to justify us in abandoning the Renaissance or in reviving mediaeval art—Romanesque, Gothic, Byzantine, or any other style? Only the most radical changes in the history of civilization, such as, for example, the dawn of the Christian era and of the Reformation and the revival of learning, have brought with them correspondingly radical changes in architectural style.

Were it necessary, we could trace two distinctly parallel lines; one the history of civilization and the other the history of style in art. In each case we shoud find a gradual development, a quick succession of events, a revival, perhaps almost a revolution and a consequent reaction, always together, like cause and effect, showing that architecture and life must correspond. In order to build a living architecture, we must build as we live.

Compare the Roman orders with the Greek and with previous work. When Rome was at its zenith in civilization, the life of the people demanded of the architect that he should not only build temples, theaters and tombs, but baths, basilicas, triumphal arches, commemorative pillars, aqueducts and bridges. As each of these new problems came to the architect, it was simply a new demand from the new life of the people, a new work to be done. When the Roman architect was given such varied work to do, there was no reason for his casting aside all precedent. While original in conception, he was called upon to meet these exigencies only with modifications of the old forms. These modifications very gradually gave us Roman architecture. The Roman orders distinctly show themselves to be a growth from the Greek orders, but the varia-

tions were such as were necessary, so that the orders might be used with more freedom in a wider range of problems. These orders were to be brought in contact with wall or arch, or to be superimposed upon one another, as in a Roman amphitheater. The Roman recognition of the arch as a rational and beautiful form of construction, and the necessity for the more intricate and elaborate floor plan, were among the causes which developed the style of the Greeks into what is now generally recognized as the Roman or Classic style.

We could multiply illustrations without limit. The battlements and machicolated cornices of the Romanesque, the thick walls and the small windows placed high above the floor, tell us of an age when every man's house was indeed his castle, his fortress, and his stronghold. The style was then an expression of that feverish and morbid aspiration peculiar to mediaeval life. The results are great, but they are the outcome of a disordered social status not like our own, and such a status could in nowise be satisfied with the simple classic forms of modern times, the architrave and the column.

Compare a workman of today building a Gothic church, slavishly following his detail drawing, with a workman of the fourteenth century doing such detail work as was directed by the architect, but with as much interest, freedom and devotion in making a small capital as the architect had in the entire structure. Perhaps doing penance for his sins, he praised God with every chisel-stroke. His life interest was in that small capital; for him work was worship; and his life was one continuous psalm of praise. The details of the capital, while beautiful, might have been grotesque, but there was honest life in them. To imitate such a capital today, without that life, would be affectation. Now a Gothic church is built by laborers whose one interest is to increase their wages and diminish their working hours. The best Gothic work has been done and cannot be repeated. When attempted, it will always lack that kind of mediaeval spirit of devotion which is the life of mediaeval architecture.

If one age looks at things differently from another age, it must express things differently. We are still living today in the period of the Renaissance. With the revival of learning, with the new conceptions of philosophy and religion, with the great discoveries and inventions, with the fall of the Eastern Empire, with the birth of modern science and literature, and with other manifold changes all over Europe, came the dawn of the modern world; and with this modern world there was evolved what we should now recognize as the modern architecture, the Renaissance, which pervaded all the arts and which has since engrossed the thought and labor of the first masters in art. This Renaissance is a distinctive style in itself, which, with natural variations of character, has been evolving for almost four hundred years.

So great were the changes in thought and life during the Renaissance period that the forms of architecture which had prevailed for a thousand years were inadequate to the needs of the new civilization, to its demands for greater refinement of thought, for larger truthfulness to nature, for less mystery in form of expression, and for greater convenience in practical living. Out of these necessities of the times the Renaissance style was evolved—taking about three generations to make the transition—and around no other style have been accumulated such vast stores of knowledge and experience under the lead of the great

masters of Europe. Therefore whatever we now build, whether church or dwelling, the law of historic development requires that it be Renaissance, and if we are to encourage the true principles of composition it will involutarily be a modern Renaissance, and with a view to continuity we should take the eighteenth century as our starting point, because here practically ended the historic progression and entered the modern confusion.

Imagine the anachronism of trying to satisfy our comparatively realistic tastes with Gothic architectural sculpture or with paintings made by modern artists! Never, until the present generation, have architects presumed to choose from the past any style in the hope of doing as well as was done in the time to which that style belonged. In other times they would not even restore or add to a historic building in the style in which it was first conceived. It is interesting to notice how the architect was even able to complete a tower or add an arcade or extend a building, following the general lines of the original composition without following its style, so that almost every historic building within its own walls tells the story of its long life. How much more interesting alike to the historian and the artist are these results!

In every case where the mediaeval style has been attempted in modern times the result has shown a want of life and spirit, simply because it was an anachronism. The result has always been dull, lifeless and uninteresting. It is without sympathy with the present or a germ of hope for the future—only the skeleton of what once was. We should study and develop the Renaissance and adapt it to our modern conditions and wants, so that future generations can see that it has truly interpreted our life. We can interest those who come after us only as we thus accept our true historic position and develop what has come to us. We must accept and respect the traditions of our fathers and grandfathers and be, as it were, apprenticed by their influence. Without this we shall be only copyists, or be making poor adaptations of what was never really ours.

The time must come—and I believe in the near future—when architects of necessity will be educated in one style, and that will be the style of their own time. They will be so familiar with what will have become a settled conviction and so loyal to it that the entire question of style, which at present seems to be determined by fashion, fancy or ignorance, will be kept subservient to the great principles of composition which are now more or less smothered in the general confusion.

Whoever demands of an architect a style not in keeping with the spirit of his time is responsible for retarding the normal progress of the art. We must have a language if we would talk. If there be no common language for a people, there can be no communication of ideas, either architectural or literary. I am convinced that the multiplicity of printed books and periodicals written by literary critics and essayists who have not even been apprenticed but are writing with authority about art, has, perhaps, been more instrumental than anything else in bringing about this modern confusion. I believe that we shall one day rejoice in the dawn of a modern Renaissance, and, as always has been the case, we shall be guided by the fundamental principles of the classic. It will be a modern Renaissance, because it will be characterized by the conditions of modern life. It will be the work of the Renaissance architect solving new problems, adapting his art to an honest and natural treatment of new materials and of new conditions. Will he not also be unconsciously influenced by the twentieth century spirit of economy and

by the application of his art to all modern industries and speculations?

Only when we come to recognize our true historic position and the principles of continuity in history, when we allow the spirit of our life to be the spirit of our style, recognizing, first of all, that form and all design are the natural and legitimate outcome of the nature or purpose of the object to be made—only then can we hope to find a real style everywhere asserting itself. Then we shall see that consistency of style which has existed in all times until the present generation; then, too, shall we find it in every performance of man's industry, in the work of the artist or the artisan, from the smallest and most insignificant jewel or book cover to the noblest monument of human invention or creation, from the most ordinary kitchen utensil to the richest and most costly furniture or painted decoration.

We must all work and wait patiently for the day to come when we shall work in unison with our time. Our Renaissance must not be merely archaeological—the literal following of certain periods of the style. To build a French Louis XII or Francis I or Louis XIV house, or to make an Italian cinquecento design, is indisputably not modern architecture. No architect until our times slavishly followed the characteristics of any particular period, but he used all that he could get from what preceded him, solving such new problems as were the imperatives of his position.

What did a man like Pierre Lescot, the architect of the Henry II Court of the Louvre, endeavor to do? It would have been impossible for him actually to define the style of his own period. That is for us, his successors, to do. For him the question was how to meet the new demands of contemporaneous life. He studied all that he could find in Classic and Renaissance precedents applicable to his problem. He composed, never copying, and always with that artistic sense of the fitness of things which were capable of realizing what would be harmonious in his work. In the same way all architects, at all times, contributed to a contemporaneous architecture, invariably with modifications to meet new conditions. This must be done with a scholarly appreciation of that harmonious result which comes only from a thorough education. So, with freedom of the imagination and unity of design, an architecture is secured expressive of its time.

Again, as in all times until now, there will be design and not mere novelty in the carriage, automobile or boat, as well as in the endless variety of implements of utility or amusement.

How is it with us in modern times? Not only do many architects slavishly follow the character of some selected period, but they also deliberately take entire motives of composition from other times and other places to patch and apply them to our new conditions and new life. Every man's conscience must speak for itself as to whether such plagiarism is right; but while the moral aspect of this question has very little to do with art, yet intellectually such imitative work, though seemingly successful, positively stifles originality, imagination, and every effort to advance in the right direction.

The way is now prepared for us to endeavor to indicate what are some of the principal causes of the modern confusion in style. With us Americans an excessive anxiety to the original is one of the causes of no end of evil. The imagination should be kept under control by given principles. We must have ability to discern what is good among our creations and courage to reject what is bad. Originality is a spontaneous effort to do work in the simplest and most natural way. The

conditions are never twice alike; each case is new. We must begin our study with the floor plan and then interpret that floor plan in the elevation, using forms, details and sometimes motives, with natural variations and improvements on what has gone before. The true artist leaves his temperament and individuality to take care of themselves.

Some say that if this is all that we are doing there is nothing new in art; but if we compose in the right way there can be nothing that is not new. Surely you would not condemn nature for not being original because there is a certain similarity between the claw of a bird and the foot of a dog, or between the wing of a bird and the fin of a fish. The ensemble of each creature is the natural result of successive stages of life, with variations of the different parts according to the principles of evolution. There are countless structural correspondences in the skeletons of organic life, but these show the wonderful unity of the universe; and yet, notwithstanding this unity, nature is flooded with an infinite variety of forms and species of life.

We must logically interpret the practical conditions before us, no matter what they are. No work to be done is ever so arbitrary in its practical demands but that the art is elastic and broad enough to give these demands thorough satisfaction in more than a score of different ways. If only the artist will accept such practical imperatives as are reasonable, if only he will welcome them, one and all, as friendly opportunities for loyal and honest expression in his architecture, he will find that these very conditions will do more than all else besides for his real progress and for the development of contemporaneous art in composition.

Never resent what at first thought may seem to be limitations and in despair try to change conditions which, if reasonable, should suggest new and interesting design. Frederick the Great said: "The great art of policy is not to swim against the stream, but to turn all events to one's own profit. It consists rather in deriving advantage from favorable conjunctures than in preparing such conjunctures." And when told of the death of the Emperor Charles VI, he said to a friend who was with him: "I give you a problem to solve: When you have the advantage, are you to use it or not?"

The architects in the early history of America were distinctly modern and closely related in their work to their contemporaries in Europe. They seem not only to have inherited traditions but religiously to have adhered to them. I believe that it is because of this that the genuine and naive character of their work, which was of its period, still has a charm for us that cannot be imitated. McComb, Bulfinch, Thornton, Latrobe, L'Enfant, Andrew Hamilton, Strickland and Walters were sufficiently American and distinctly modern, working in the right direction, unquestionably influenced by the English architecture of Inigo Jones, Sir Christopher Wren, James Gibbs, Sir William Chambers, men of talent, were misled, alas, by the confusion of their times, the beginning of this modern chaos, the so-called Victorian-Gothic period.

Gifted as Richardson was, and great as was his personality, his work is always easily distinguished, because of its excellent quality, from the so-called Romanesque of his followers. But I fear the good he did was largely undone because of the bad influence of his work upon his profession. Stumpy columns, squat arches and rounded corners, without Richardson, form a disease from which we are only just recovering. McComb and Bulfinch would probably have frowned upon Hunt for attempting to graft the transitional Loire architecture of the fifteenth century upon American soil, and I believe that all will agree

that the principal good he accomplished was due to the great distinction of his art and to the moral character of the man himself rather than to the general influence and direction of his work.

Whether we agree with Charles F. McKim or not in wanting to revive in the nineteenth century the Italian Renaissance of the sixteenth century, the art of Bramante, San Gallo and Peruzzi, he had perhaps more of the true sense of beauty than any of his predecessors in American art. His work was always refined, individual, and had a distinctly more classic tendency in his most recent buildings. We have seen that the life of an epoch makes its impress upon its architecture. It is equally true that the architecture of a people helps to form and model its character, in this way reacting upon it. If there be beauty in the plans of our cities and in the buildings which adorn our public squares and highways, its influence will make itself felt upon every passer-by. Beauty in our buildings is an open book of involuntary education and refinement, and it uplifts and ennobles human character. It is a song and a sermon without words. It inculcates in a people a true sense of dignity, a sense of reverence and respect for tradition, and it makes an atmosphere in its environment which breeds the proper kind of contentment, that kind of contentment which stimulates true ambition. If we would be modern, we must realize that beauty of design and line construction build well, and with greater economy and endurance than construction which is mere engineering. The qualitative side of a construction should first be considered, then the quantitative side. The practical and the artistic are inseparable. There is beauty in nature because all nature is a practical problem well solved. The truly educated architect will never sacrifice the practical side of his problem. The greatest economic as well as architectural calamities have been performed by so-called practical men with an experience mostly bad and with no education.

It is, I believe, a law of the universe that the forms of life which are fittest to survive—nay, the very universe itself—are beautiful in form and color. Natural selection is beautifully expressed, ugliness and deformity are synonymous; and so it is in the economy of life—what would survive must be beautifully expressed.

Has the world beheld in art that which we call style, changing with each age, the visible expression of man's inner consciousness, appearing above the horizon with the dawn of civilization, gradually developing in orderly sequence, one degree upon another, following the course of time? Has all this come into existence only to disappear again on the other side of the small circle of its horizon? Has history recorded its progress from dawn to twilight, unconscious of its rapid fading into the darkness of night? Or will it rise again following the natural laws of the universe? Or, like the falling star, is it lost in the confusion of eternal space, never to appear again?

As each age tells its own story in its own language, shall we tell our story to future generations in our own way? A great tide of historic information has constantly flowed through the channel of monuments erected by successive civilizations, the art of each age being an open book recording the life and spirit of the epoch, ofttimes verifying the truth of its own literature, an integral part of the whole scheme of evidence. The archaeologist thus supplements the historian, but alas, with the chain divided, the future will have drifted away from the past into a vast ocean of discord, where architectural continuity will have ceased to exist.

The recently discovered buried cities of Assyria give us a vivid idea of the civilization lost to history. The pyramid of Cheops and the temples of Karnak and Luxor tell us more of that ingenuity which we cannot fathom and of the grandeur and life of the Egyptian people than the scattered and withered documents or fragments of inscriptions that have chanced to survive the crumbling influences of time.

The Parthenon and the Erectheum bespeak the intellectual refinement of the Greeks as much as their epic poems or their pilosophy. The triumphal arches, the aqueducts, the Pantheon and the basilicas of Rome tell us more of the great constructive genius of the early republic and the empire of the Caesars than the fragmentary and contradictory annals of wars and political intrigues. The unsurpassed and inspiring beauty of the Gothic cathedrals which bewilder us, and the cloisters which enchant us, impress on our minds a living picture of the feverish and morbid aspirations of mediaeval times, a civilization that must have had mingled with its mysticism an intellectual and spiritual grandeur which the so-called dark ages of the historians have failed adequately to record; and in America, even amid the all-absorbing work of constructing a new government, our people found time to speak to us, of today, in the silent language of their simple Colonial architecture of the temperament and character of our forefathers.

And when in the tumult of this modern warfare men's passions overcame their reason, and the great monuments of history that have survived the ages are subjected to the onslaught of modern armament, let us hope that they may not be further subjected to the work of the architect who would fain restore them in the style which has passed and so rob us of all that is left. Let them be protected by every device from further destruction, to tell the story of this twentieth century civilization, this vaunted culture which has failed to respect and protect its heritage.

Will our monuments of today adequately record the splendid achievements of our contemporaneous life, the spirit of modern justice and liberty, the progress of modern science, the genius of modern invention and discovery, the elevated character of our institutions? Will disorder and confusion in our modern architectural styles express the intelligence of this twentieth century? Would that we might learn a lesson from the past—that modern architecture wherever undertaken, might more worthily tell the story of the dignity of this great epoch and be more expressive of our contemporaneous life!

* * * *

Warning to Smokers in Office Buildings

The Portland Association of Building Owners and Managers is preparing a quantity of gummed labels, carrying a warning of the menace to life and property in throwing cigarette and cigar stubs, matches, etc., out of windows, and appealing to tenants to refrain from this practice. It is proposed to stick these labels on window frames or in some other conspicuous place in each room of a building. There is no denying the fact that the practice of throwing cigarette and cigar stubs out of windows is a fire menace, but we think some better method of warning could be adopted than the disfiguring of window frames with unsightly labels.

* * * *

Gothic Architecture*

By REV. JOHN CARROLL PERKINS, D. D.

ONE invariably has difficulty in saying exactly what Gothic Architecture is, owing to its vast wealth of form and structure and decoration. I am led to remark simply that Gothic is characterized by a certain spirit, just as of course Classic architecture is. You feel it or you do not feel it; you feel it or know it, by its peculiar influence, its effect upon your spirit, its suggestiveness rather than by any fixed and formal definition. Just as in biology it is impossible to say where vegetable life ends and animal life begins, so in architecture it is not easy to say, indeed it is impossible to say, just where the Classic ends and the Gothic begins. In general you know quite well the Gothic and the Classic; but drawing conclusions too sharply in particular, often leads into real difficulty.

I think the difference between Gothic and Classic is elemental, based on different human emphases and experiences. The classic is the glorification, the idealization of horizontal lines; the Gothic is the glorification of perpendicular lines. The former answers psychologically, doubtless, to all the requirements of exact philosophical truth; the latter sets no limit to fancy and the boldest imagination. So far as Graeco-Roman civilization goes, the former is indiginous in the south; the latter is native to the north, each answering to some peculiar genius inherent in those different parts of Europe. Playing a larger role than we often regard are the respective climatic conditions of north and south, the warm, sunny south providing flat horizontal roofs and for height finding expression in domes; but the north in answer to more continuous rains and snows providing steep roofs and when height is sought, raising lofty spires, which are really only exaggerated roofs.

The splendid horizontal strings of the temple of Theseus at Athens, or the buildings at Paestum, or the Coliseum at Rome, are the glory of the straight line. And that the south never got quite beyond this even when employing Gothic, is well shown in Giotto's brilliant tower in Florence, or the leaning tower of Pisa, which are covered with Gothic ornamentation as the Italians influenced by their Lombard conquerors conceived of it; but the horizontal lines were still the most prominent features in galleries and mouldings, however high the tower rose. But go into a Gothic cathedral and behold the choir of Beauvais, where height would seem without limit, or even a less lofty place like the nave of Canterbury, and every line above the floor that meets the eyes is perpendicular, tense, and leading infinitely and only upward.

When we come to what is called perpendicular Gothic so largely developed in England, horizontal and perpendicular lines find about equal accentuation. This is splendidly shown in the long river front of the British Parliament buildings.

Naturally when one thinks of Gothic his mind dwells most upon cathedrals and churches; and I suppose that strictly speaking, if one considers the technique of structure, true Gothic is found only there. Professor Charles H. Moore was accustomed to insist that the Gothic did not in fact exist anywhere outside the Isle de France and its cathedrals. But, if Gothic is a matter of feeling and spirit, then the traditional details of ornament and pointed arch and roofs carry us far into public halls and houses, castles and bridges, everything that has the Gothic mood.

*From an address delivered at the Annual Meeting of the Washington State Chapter, A. I. A.

The ground plan of a Gothic cathedral shows the form of the Latin cross, the long arm forming the nave, the side arms constituting the transepts, the upper arm containing the choir. This simple plan is practically universal and probably originated with the Gothic. Sainte Chapelle in Paris, built by Louis IX, during the years 1243-47 and called by Ruskin the most perfect specimen of Gothic work, although it illustrates but one part of the Gothic system, consists of but one room, or rather, two stories of one room each. Of the great cathedrals, only Bourges is without transepts, one long high magnificent interior. Along the naves are generally aisles, one and often more than one on either side; and the transepts have aisles. About the apse, which is the generally circular termination of the choir, is a series of chapels, forming a kind of crown, and adding at times inexpressible beauty. The choir is east. Directly opposite, and terminating the nave, is the so-called west front, which has always tempted the builders into the most lavish display of sculptural adornment and decoration. Here are often hundreds of statues, and allegorical representations setting forth Christian history and secular history; representations of men at work in the arts of agriculture and of mechanics; kings, prophets, martyrs and demons in all the varied pursuits for which the imagination gives them scope. Hardly inferior in sculptured detail are the fronts of the north and south transepts. There are usually three doorways in the west front, the main doorway corresponding to the nave, and the others to aisles. One can never forget the impression of the five grand west portals of Bourges, for here are double aisles on either side the nave, each terminating in a portal. The most imposing towers and spires are generally the two of the west front. But often spires were planned for the transept fronts, and above the intersection of the cross. At Rheims there were plans for a great central tower and spire and four smaller spires surrounding it. These five with six others at the entrances made eleven spires that were planned for by the architects. There are few spires left in France. Either they were never completed, or have fallen, or else fire, kindled by lightning or carelessness, has destroyed them.

The interior walls of a Gothic cathedral consist generally of three courses of arches, rising one upon the other, and designated as pier arches or ground story, triforium and clerestory. The triforium was a sort of gallery going about the church, and was often used as a place for spectators. By the nature of the church's construction there could of course be no light behind the triforium and for this reason it was often called the blind-story in distinction from the upper or clerestory, which was always glazed.

One who is familiar with the great churches of England either by observation or in pictures, remembers the beautiful close, or park, by which they are surrounded. There is almost always the vision of green trees or gently flowing streams, of velvet turf and the general sense of isolation and repose. Not so is it in France. The French churches rise right out of the most thickly builded sections of the city, with the houses crowding upon them, and not seldom clinging to their walls. So it often happens that what one can see of the church is that which appears above the roofs of other buildings. One reason of this, if not the chief, is that most of the English churches were built by monastic orders, and the isolation was natural. There are many such in France. But the great Gothic cathedrals of France were the result of popular movements. They belonged primarily to the towns. Mr. Walter Pater, in

his charming paper, "Notre Dame d'Amiens," tells us how over against monastic interest, as identified with a central authority—king, emperor or pope—the towns pushed forward the local, and, so to call it, secular authority of their bishops, the flower of the "secular clergy," who were ready enough to make their way as the natural protectors of such townships. Hence arose the great civic pride in their vast cathedrals and their location in the very midst of their streets and houses. They were people's churches, characterized by splendor and space.

We like to emphasize this communal and secular love of the church, not only for its definite and added religious value, but also as glorifying that ideal sense of civic unity and power, that must underlie any supremely successful work in any age. A few episodes in the building of the cathedral of Chartres well illustrate this. Tradition has it that a Druid temple once was here. Also that the original Christian church was the first ever built in France, having been founded when the Virgin, to whom it is dedicated, was still alive. The real history, however, begins in the middle ages. In 1020, a church had been begun to take the place of one destroyed in war between the Count of Chartres and the Duke of Normandy. Time went on without witnessing a completion, until the year 1145. Then a wave of popular enthusiasm swept over the people and they were transported with a zeal to finish their church. It was just at that time that St. Bernard was preaching the Second Crusade, 1147. Masses of men and women were eager for the same result. All dreamed and prayed for the common task, the one condition in which really great visions grow.

A letter of Hugh, Archbishop of Rouen, to the Bishops of Amiens, describes the popular ardor. "At Chartres," he says, "the people have begun, in the spirit of humility, to drag carts and wagons to help forward the erection of the church, and their humility is made resplendent with miracles." Another contemporary, Robert du Mont, writes, "Men began at Chartres to harness themselves to carts, and to drag them, laden with stone, wood, grain, or whatever might serve for the work of the church whose towers were then building. He who has not seen these things will never see the like. Miracles are often wrought, and song and thanksgiving are offered continually to God." "Who ever heard the like," exclaimed Abbot Haimon of St. Pierre-sur-Dives, "that lords and princes, and the rich and powerful and noble, both men and women, should submit their necks to the yoke, and like brute beasts drag to the asylum of Christ carts laden with wine, grain, oil, lime, stone, wood, and whatever else is needful for the support of life or the structure of the church? And in the dragging it is wonderful to see, that when sometimes a thousand, or even more, men and women are attached to a wagon—so great is its size, and so heavy the load put upon it—they advance in such silence that no voice, not even a murmur, can be heard, and unless his eye beheld it no one would suppose himself in the presence of so great a multitude."

"The building of the church," wrote Professor Charles Eliot Norton, "became a common work—the work not of one man, but of the whole community. The plan indeed was that of the artist, but its execution required the contributions and the labors of all the people. The edifice was erected by their hands, and was the visible evidence of their piety, their aspirations, their hopes, and their pride."

A cathedral like this is no mere work of art. It is no mere church. It is a people's history. It represents what men and women were and what they hoped and dreamed throughout the centuries.

All life is here, the life of art and of religion and of the ideals of civic pride and industrial achievement. No task, but here is wrought. No dreams but here made real. Here is a meeting place of all the past and here the hope of all the future. The best those people knew is in their glass and stone. Here is a cathedral because all men felt the need of work in common for one great end, which had an equal interest for them all, whether lord or serf. The shoulders of all were on a level, and their sympathies had reached perfection. So only since the world began is great work done.

James Russell Lowell found in "Chartres" the inspiration for his poem "The Cathedral." Speaking of his fancy, he writes:

> One feast for her I secretly designed
> In that old world so strangely beautiful
> To us the disinherited of old,—
> A day at Chartres, with no soul beside
> To roil with pedant pride my joy serene
> And make the minster shy of confidence.
> * * * * * * * *
>
> With outward senses furloughed and head bowed
> I followed some fine instinct in my feet,
> Till, to unbend me from the loom of thought,
> Looking up suddenly, I found mine eyes
> Confronted with the minster's vast repose.
> Silent and gray as forest-leagured cliff
> Left inland by the ocean's slow retreat.
> * * * * * * * *
>
> It rose before me, patiently remote
> From the great tides of life it breasted one,
> Hearing the noise of men as in a dream.

* * * *

New Standard Weights of Metal Lath

By P. F. CUNNINGHAM, General Fireproofing Company, San Francisco

FEW persons realize the great work being accomplished by the United States Department of Commerce through its Bureau of Standards toward the elimination of unnecessary and often confusing duplications and near duplications in the manufacturing field. Their method of procedure, when they find a commodity which they think calls for readjusting, is to call into conference all the manufacturers of that commodity, large wholesalers, engineers, artisans who assemble or use the articles and anyone else vitally interested. There the Bureau lays before the assembly their complaints, the results of their investigation and their recommendations. Usually the conference is but a preliminary to further meetings, and final action results in the elimination of many sizes and kinds of that particular commodity. Many valuable suggestions and general helps have resulted from these meetings for they bring together, as in no other manner, all parties concerned from the designing engineer and manufacturer through to the ultimate purchaser.

One of the most fertile fields for action was found in the metal lath industry where manufacturers seemed to find it necessary for one reason or another to put out a multiplicity of weights and gauges. I have before me at this moment tables showing thirteen different weights for 26 gauge diamond mesh lath. This led to much confusion in the selling end as well as the manufacturing end of the industry. One concrete

example will serve to illustrate this confusion: An architect, within a radius of one hundred miles of San Francisco, was writing specifications for a large building, when a salesman for a metal lath house called and asked him to specify weight as well as gauge on his metal lath. The architect replied that his own way had always been good enough before and he guessed that he could get along all right without having a lath man tell him how his specifications should read. A short time later the plans were out for segregated figures and where lath was spoken of it read "lath shall be 25 ga. expanded metal lath, painted." Of course, the lathing contractor figured on a good weight lath, then after he got the contract began to shop around for the cheapest lath on the market. He finally found a manufacturer, who, by making large meshes, could stretch his 26 ga. sheets to weigh but 1.7 lbs. per square yard where the standard weight is 2.5 lbs. per yard. The contractor bought the lath and put it on and **lived up to the specifications.** The plastering contractor objected but it was useless so he, as he put it himself, did the best he could to come out without a loss.

Many complaints similar to the above coming to the attention of the Associated Metal Lath Manufacturers led them to suggest to the Department of Commerce that a conference be called to discuss their problems. The preliminary conference of the Manufacturers under the auspices of the Division of Simplified Practices was held in Washington, October 2, 1922. At this conference each manufacturer submitted data showing just what he produced in way of types, sizes and gauges. This was followed by other conferences in Washington and Pittsburgh at which were present, beside the manufacturers, representatives from the American Institute of Architects, the National Builders' Supply Association, the American Hardwall Plaster Company, the Lathers' International Association, together with independent architects and large contracting firms; also representatives from the Division of Simplified Practices, Department of Commerce.

The final outcome of these conferences was the reduction from one hundred and twenty-five varieties of metal lath to twenty-four, an elimination of eighty per cent of varieties. Among other recommendations adopted might be mentioned the following:

A. No metal lath is to be tagged or sold by gauge but shall be tagged and sold by weight per square yard only.

B. Metal lath galvanized after fabrication is eliminated and but two weights (namely 2.5 lbs. and 3.4 lbs.) cut from galvanized sheets are to be manufactured.

C. These recommendations to become effective July 1, 1924.

The following tables give the new recognized sizes and varieties:

TABLE 1—FLAT EXPANDED METAL LATH

This includes all Diamond mesh, Herringbone and similar patterns.

Weight in pounds per square yard of—			Gauges of sheets (U. S. standard)	
Painted steel.	Special metal.	Sheets galvanized before fabrication.	Minimum	Maximum
2.2	2.2	.....	28	26
2.5	2.5	2.5	28	26
3.0	3.0		28	24
3.4	3.4	3.4	26	24

Note: Tables taken from pamphlet: Simplified Practice Recommendation No. 3, Metal Lath: issued by The Bureau of Standards. Copies may be obtained from Superintendent of Documents, Government Printing Office, Washington, D. C., at 5 cents each.

TABLE II—3/8-INCH EXPANDED METAL LATH

Weight in pounds per square yard of—		Gauges of sheets (U. S. standard)	
Painted steel.	Special metals.	Minimum.	Maximum.
2.5		28	26
3.0	3.0	28	26
3.5	3.5	27	24
4.0		26	24

Note: Since this table was adopted, nearly all manufacturers have eliminated the 2.5 lb. size in 3/8-inch Rib Lath.

TABLE III—FLAT RIB EXPANDED METAL LATH

Weight in pounds per square yard of—		Gauges of sheets (U. S. standard)	
Painted steel.	Special metals.	Minimum.	Maximum.
2.75	2.75	30	28
3.20	3.20	30	28
3.75	3.75	29	24
4.00	4.00	28	24

TABLE IV—UNITED STATES STANDARD GAUGES
For sheet and plate iron and steel used for above tables.

Gauge number.	Weight per square foot.	Approximate thickness steel.
	Lbs.	inch
24	1.0000	0.0245
25	.8750	.0214
26	.7500	.0184
27	.6875	.0169
28	.6250	.0153

The tables given and recommendations noted, together with a few more unimportant ones, were finally approved January 1, 1924 by Herbert Hoover, Secretary of Commerce, subject to annual revision by a similar conference.

* * * *

Small Sculpture Competition

THREE prizes, of $250, $150, and $100, and first and second Honorable Mentions, are offered through the generosity of Messrs. Procter and Gamble, to focus the attention of sculptors on the recent discovery that certain kinds of white soap are a desirable material for carving of small sculpture, both in relief and in the round. Although the most notable results so far achieved have been with ivory soap, no restrictions are made in this competition regarding what white soap shall be used by the contestants.

No subject is set for the competition; the exhibits will be judged for beauty, inherent art qualities and excellence of technic, by a jury to be announced later.

The Procter and Gamble sculpture prizes and honorable mentions will be awarded by the jury at the Art Center, 65-67 East 56th street, New York City, on December 15th at a private view and reception.

WILLIS POLK, ARCHITECT
This was a favorite photograph of Mr. Polk, taken in his office a number of years ago.

Passing of Willis Polk, Architect and Master Builder

WILLIS POLK, distinguished architect of San Francisco, passed away at his country home in San Mateo September 10th from an acute attack of the heart. He had been ailing for several weeks. Polk was 59 years old and a native of Kentucky. He was a fine example of the self made man, never having attended a public school, but was tutored by his father, who served as a Colonel in the Confederate army during the Civil war. Recognized as one of the foremost architects in America, with notable work done in New York, Washington and Chicago, while associated with D. H. Burnham, before he achieved his greatest success in San Francisco, Polk preferred always to be known as a "master builder." He was an artist of exceptional ability.

The fortunes of his family broken by the Civil war, Polk went to work at the early age of six, when he sold papers on the streets of St. Louis. At the age of fifteen, in Arkansas, his plans for a schoolhouse were accepted in an open competition.

First coming to San Francisco in 1886, before he was of age, Polk had considered that city his home, although, in 1900, dissatisfied with his progress in California, he went to Chicago, where he remained four years in association with the late D. H. Burnham.

The period of reconstruction following the fire of 1906 gave Polk his great opportunity. Among the buildings which he designed or re-constructed were the First National Bank, Pacific Union Club, Merchants' Exchange, Mills, Cuyler Lee, Chronicle building and Chronicle annex, the famous glass front building on Sutter street, between Kearny and New Montgomery, the Western Pacific mole depot and Oakland passenger station, the D. O. Mills bank in Sacramento, and the Spring Valley Water Company's building. Polk regarded the water temple at

Sunol his masterpiece. A late view of the temple is shown on the cover of this issue.

In association with Charles Page Brown, Polk designed the Ferry building and the Crocker building, in San Francisco, and he also planned many of the finest residences of San Francisco and the exclusive peninsula district. He had much to do with the creation of the Panama-Pacific International Exposition of 1915, and for a time was chairman of the Architectural Commission of the Exposition company.

The firm of Willis Polk & Company will undoubtedly be continued by Mr. James H. Mitchell, who had been associated with Mr. Polk for a number of years. The firm name will go on and probably the company will be incorporated with Mrs. Polk retaining an interest.

One of the most important projects planned by Mr. Polk at the time of his death was the Women's Club building to be erected on Post street, between Mason and Powell, San Francisco, for the National League of Women's Service.

Willis Polk

By ARTHUR BROWN, JR., A. I. A.

[*A personal tribute by one who knew him and believed in his ideals*]

WILLIS POLK was truly a part of the life of San Francisco, reflecting in his character and work that subtle flavor which differentiates San Francisco from the rest of the world, and the city in turn owes not a little of its character to his artistic vision. The problems of its citizens gave to Willis Polk the opportunities on which his talent grew. The spirit of the city was congenial to him, for he had those same adventurous leanings which inspired the pioneers. That the conditions for the full flowering of architectural talent have been rather arid in San Francisco is perhaps, true, but the vigorous quality of his art overcame many exasperating obstacles.

His character was clearly marked with the qualities that go with artistic accomplishment. He was fearless, mentally and physically, and possessed of a fighting spirit which delighted in defending his artistic convictions and what he deemed the truth, with all the sharp weapons of his quick wit and withering satire. Timidity was not in his make up and difficulties did not daunt him when he was trying to express an architectural idea. His was an intuitive mentality and his judgments were swift and positive. His mind, always alert, assimilated artistic knowledge with surprising ease and rapidity. In the drafting room he grasped situations quickly and was always ready with ingenious and practical solutions.

His love of action and his craving to be in the midst of the life of the city led him to an intense interest in the development of the city, which revealed his breadth of vision and his temperamental tendencies to aim at monumental and classic ideals.

Love of life in all its phases, intense love of art in its various shapes, power to reflect these emotions in tangible form—these were the characteristics of Willis Polk.

His presence was distinguished and magnetic. His appearance finely drawn and aristocratic. Generous to a fault and Quixotic in temperament he often acted to his own disadvantage. But to the ideals of the beautiful, the sincere, and "la Grande Architecture," he was ever faithful and never spared his untiring energy and esthetic gifts to advance those ideals.

His numberless friends are bowed in grief. San Francisco has lost one of her most distinguished and brilliant sons. Art has lost a rarely gifted devotee.

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Architect and Engineer
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Founded 1905 by E. M. C. Whitney
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Published Monthly in the Interest of the Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast by The Architect and Engineer, Inc.

PUBLICATION OFFICE:
627-629 Foxcroft Building, San Francisco
Telephone Douglas 1828

The publishers disclaim any responsibility for statements made in the advertisements of this magazine.

Terms of Subscription
(Including postage) to all parts of the United States, $2.50 per annum; to Canada 75c additional; to all Foreign points $1 additional

Vol. 78 SEPTEMBER, '24 No. 3

THERE is no other class of building to which architecture more consistently belongs than to the small house. Yet it is a fact that a very small proportion of the small homes are able to get attention from the architect. An important reason for this would appear to be that the cost of an architect's service, commensurate with the work devolving upon him, appears in the case of a small house out of proportion to the total amount the prospective home builder has to spend. The result is that the home builder usually considers it necessary to dispense with the architect's services.

CHAS. H. ALDEN, A. I. A.

GOOD ARCHITECTURE APPRECIATED

Elsewhere in this number we publish for the first time photographs of those buildings in Southern California, decreed by a distinguished jury, to constitute the best in architecture that has been done in Los Angeles and vicinity the past year. The jury's selections appear to have been well made. In giving credit not only to the architect but to the owner and contractor of a building, the Chapter has followed a commendable plan—a plan that cannot fail to stimulate interest and instill pride in all three at the same time and encourage closer co-operation that is sure to bing about good results.

The American Institute of Architects is constantly seeking means to improve the technical ability of its members and to call to public attention commendable examples of current work. The photographs herewith reproduced are examples of the best work which is being done in Southern California today. What has been achieved in Southern California can be accomplished in other Pacific Coast cities and it would be a splendid thing if the other Chapters would make possible similar jury selections each year.

BUILDING WITHOUT AN ARCHITECT

People who build without an architect, are divided into three classes: the folks who think they can't afford an architect, those who fear him, and those who think they can do very well without him. Of the three groups perhaps the third is most in need of a fervent "Heaven help them!"—those sufficient-unto-themselves fellows who crown wooded knolls and accent corner lots with masses of brick, stucco, stone and timber, that all but cry out in their dumb rebellion of mass, design, combination of materials, crudities in paint and brazen hardware. Honest and dishonest American dollars are piled up every year in hideous monuments to people who know "what they want" so well that they have no need to consult that kindliest of artists—the architect.

Every now and then we come across one of these monuments. They blare out at us, offend us, and many times they positively nag us. They pollute and stunt the lives about them. What can be the ex-

istence of families reared under the roof of such glaring and unsightly piles? Can it hold anything of simplicity or genuineness or beauty?

Then there is the class who feel sure that they can't afford an architect. Maybe they are building only a small camp, a modest house, a suburban cottage—or maybe they are about to make the big effort of their lives to get a really pretentious house in which to put their home. They have a little ready money, and they have accumulated this by the bitterest and most consistent saving. It would seem sheer folly to spend part of it on an architect, when that very amount might mean that they had or did not have a porch, a well-equipped pantry, or the long-desired fireplace. But just here the client is wrong. The architect can save him a good percentage on the cost of his work. This has been proved over and over again. The average person about to build knows little or nothing of the value of materials, of labor, of how best to let a contract to advantage, or how to carry on the superintendence of the work in order to save both time and money. Someone says, "But if my architect saves me a substantial percentage on the cost of my building, wherein do I gain if I have to turn about and pay him six or ten per cent of the cost of my house?" Granted you do have to pay him six or ten per cent of the cost of your house, how about the quality of the house? It has a value that can hardly be reckoned in dollars and cents. If you have had faith in your architect (and it is no use to give yourself over to him if you have not), he has achieved for you a house, a camp, a mansion, a cottage, which you and your contractors never could have built, work as you might. By sympathy, by knowledge and by constant supervision and interest, he has saved a little here for you, more there, and spread it where it will **live** the best. The architect feels his problem as a whole. He sees the completed mass and that picture includes for him the smallest and least important detail. In this way your expense is proportioned, is shifted to advantage here, or checked at some other point, so that finally you have saved and in that saving not lost, but gained mightily.

Finally, we come to that most humorous of the three groups—the people who fear architects. That the public has the wrong idea about employing architects for small work, is evidenced in the following incident related by Mr. Harper Hannah in House Beautiful:

"A dear old lady once said to me, 'Oh, I very much admire and respect these architect men, in the same way I admire and respect the stars, the great pictures of the world, the old composers, but my dear, how would a humble person like me ever dare to consult an architect on the little problems I have? I might only need a different fireplace or a kitchen with more sun. Imagine me approaching one of these learned gentleman!'" They **are** learned gentlemen and right there lies one of the deepest reasons why their services should be employed. A thing does not have to involve thousands of dollars or be highly detailed to command their interest and respect.

"I have seen them rescue and carry home from miles away," says Mr. Hannah, "an old pumpkin pine board, an old chair, a satchel full if discarded bricks, or a weather-beaten gate or pilaster; because to them, these cast off things were full of simple, sturdy splendor. Did any one of them represent money or pomp? No. But the old chair, the gate, the board, they kept near them; they warmed and cheered them with their fine faith in the simple and the basic, until even an inexperienced client must needs admit the old relics did contain something of beauty."

THE ownership of a home, the feeling of independence that comes with possession of a bit of the earth, are among the most powerful incentives to high civic interest and usefulness.

CALVIN COOLIDGE

WORLD MAP AN ACHIEVEMENT

Speaking editorially some months ago regarding the United States Government's growing activities in arranging for recreation, transportation, park reservation and the conservation of natural resources, etc., we concluded with the following "Instead of planning for cities the vision now widens towards the planning of a country and its people."

And now we are reminded that one of our local architects, who by the way, was also a pioneer in the city planning of San Francisco, has gone further even than the Government and has given us a plan not of a city or a country but of the whole round world! By this, of course, we mean a plan in the sense that an architect or an engineer uses the word: a miniature reproduction on paper **drawn to an exact uniform scale.** And no such scale map or plan of the whole world had ever been devised until the invention of the octahedral projection, popularly known as the "Butterfly Map." One version of this map only recently perfected is mathematically true to scale either along the meridians or parallels **all over the world.** This gives exact scale on an infinity of lines all over the map. On Mercator's chart there is but one such line and on gnomonic charts none whatever.

We learn that the publication in large and complete form of this now famous world map has just been undertaken by the biggest map making firm in New York, C. S. Hammond and Company.

Such a radical and even startling innovation in presenting the plan of Our Home the habitable earth was not put over easily nor in a hurry, for it is now more than 19 years since Architect B. J. S. Cahill first tackled this difficult and baffling problem. It was sufficiently solved for publication in miniature form only after five years close application, while the perfecting details have been worked out only within the last twelve months, that is to say, eighteen years after the first studies were made.

Even in its first crude form the great value of this new principle of projection was instantly recognized by competent cartographers, as well as by some of the world's most famous scientists then living, such as Alfred Russell Wallace and Ernst Haeckel. The international value of this impartial world map is proved by the inquiries and endorsements that have come from foreigners in every quarter of the globe.

Already the new map is officially in use by the United States Government, the State of California, the City of Charleston, S. C., Harvard University, the American Express Co. and Californians Inc. It is authoritatively stated that the Butterfly map has been printed in miniature over ten million times and this publicity is only just beginning.

It is claimed, and not without reason, that it is not only the most accurate all-round world map ever invented but that a more accurate one is impossible since the author has deliberately taken the time to make the solution exhaustive and final.

If this is so, Mr. Cahill may well be said, in the words of one of our leading architects, to have got "a pretty good strangle hold on immortality."

IT isn't easy for an architect to do his best work in the face of a lack of appreciation and of inadequate compensation—but it is often the way to win.

CREDIT FOR WASHINGTON STADIUM

Referring to the Stadium of The University of Washington, at Seattle, illustrated on page 90 in the article "Outdoor Theatres and Sta-

diums in the West" by Mr. Emerson Knight, landscape architect. and published in the August number, we wish to give credit to the firm of Bebb and Gould of Seattle, as designing architects of this stadium. They also state that the structure is at present only partially completed. We regret that information furnished by the University of Washington failed to include this vital fact for the caption.

WILLIS POLK—1865-1924

The death of Willis Polk on September 10th removes one of the most important and outstanding architectural figures the Pacific Coast has known. Polk was one of those few architects whose name became familiar to the community at large. This came about not wholly through public interest in his buildings, calculated as his art was for a measure of popularity; but in a large degree as well it was the result of his picturesque personality, which lost no opportunity to assert itself in trenchant and unexpected ways. Indeed, in the public mind his name was probably associated with an idea of charlatanry.

Nothing could have been further from the truth. Polk had a mind of a genuine power and distinction. He possessed a degree of self-knowledge which probably inspired a mild contempt for many of his actual or potential adversaries; and an inborn love of encounter often led him to provoke adversaries where none promised to turn up in the course of events. His egocentric nature prompted many an amiable or mordant whimsicality, which gained more public attention than architecture as an art, unfortunately, can ever hope to obtain. In many instances when the public enjoyed him as a consummate publicity specialist and the profession blushed for his unprofessional lack of dignity, there can be no doubt that Polk was enjoying himself immensely and laughing up his sleeve.

As to the sincerity of Polk's architecture there can be no question. He was decidedly a figure to be reckoned with. His talents were of a high order and his training was sound. By taste his interests were predominantly classical, yet he showed a surprising degree of adaptability when occasion offered, and could indulge an almost irresponsible fantasy. His work is direct and compact in planning, concise in composition, robust and masculine in handling. Creative he was not in the true sense of the word. His role was essentially that of conservator and adapter of the best and most valid which tradition has to offer.

His practice embraced practically all branches and sizes of commercial and residential work, as well as public work. He also performed much noteworthy service of a general and advisory nature. It is extremely regrettable that he should have passed before the realization of his opera house for San Francisco, a project which had occupied his mind for many years, and which was of a nature to draw out his genius more completely, perhaps, than anything on which it had been his fortune to work.

—I.F.M.

Passing of Architect Albert Held

In the passing of Mr. Albert Held, the architectural profession in the state of Washington mourns a loss of one of its most devoted and best loved members. Albert Held was one of the pioneer architects of the Pacific Northwest. After receiving early education and training in Minnesota, he began the practice of architecture in Spokane in 1889 and continuously until his death, devoted himself unselfishly and with unfailing courage to the upbuilding of the profession and the community. It was natural that the ideals of the Institute very early claimed his attention and he became one of the first members of the Seattle Chapter. Mr. Held met his final sufferings with the same cheerful courage that had characterized his life.

With the Architects

Building Reports and Personal Mention of Interest to the Profession

Honor Award

Architect Chas. Peter Weeks of Weeks and Day, San Francisco, has been advised by the Office of the Department of Works and Railways, Australia, that he has been awarded first prize for his preliminary design for the proposed five million dollar House of Parliament at Canberra, Australia. Mr. Weeks' plan was placed at the head of six designs offered by as many leading architects from all parts of the world, each of whom was given a prize of $500. Mr. Weeks received a letter from Mr. Phillip B. Hudson, President of the Royal Victorian Institute of Architects at Melbourne, personally complimenting him for his design.

Country Hotel and Golf Course

Preliminary plans are being made by Architects Weeks and Day of San Francisco, for a hotel, club building, golf course, etc., to be built on a 400-acre tract, two miles south of Redwood City, in San Mateo county. It is estimated that $1,500,000 will be expended by a syndicate composed of Messrs. E. C. Pringle, John C. Wilson, et al.

Two other hotel and golf course projects are being promoted, one near Los Gatos for which Messrs. Shea and Shea are the architects, and the other near Saratoga on property owned by Messrs. Phelan, Fay, Tibbetts and Kuhn. Mrs. Chas. Bell of Saratoga and Dr. Franklin of the Los Gatos Chamber of Commerce are among the promoters.

Form Partnership

Mr. Martin J. Rist, for several years chief draftsman in the office of Architect Carl Werner of San Francisco, is now associated with Architect C. E. Gottschalk with offices in the Phelan building. The firm has approximately one million dollars worth of new work on the boards, including a $300,000 bank building to be erected at Seventh and K streets, Sacramento, for the United Bank and Trust Company, and a group of fireproof buildings for the Old Ladies University Mound Home, University and Mound streets, San Francisco, to cost $300,000 or more.

Santa Barbara Lodge Building

Working drawings are being prepared by Architect Carl Werner of San Francisco for a three-story lodge building for the Santa Barbara Elks, estimated to cost $265,000.

Prospective Skyscraper

Architect N. W. Mohr, 310 California street, San Francisco, has prepared preliminary plans for a Class A hotel and theatre which is being promoted by Carolin Kutner and associates to cover the gore at Market, Hayes and Polk streets, San Francisco. The sketch shows a fifty-story building, the tower being similar in design to the Tower of Jewels at the Panama-Pacific Exposition, San Francisco. The hotel will contain four hundred rooms and the theatre will seat 3000 persons.

Concrete Garage

Architect Creston H. Jensen has completed plans for a reinforced concrete auto supply building and garage to be occupied by the Pacific Auto Motor Service, Incorporated, at O'Farrell and Post streets, San Francisco. Monson Bros. are the owners and builders. Mr. Jensen announces the removal of his office from the Call-Post building to the ninth floor of the Santa Fe building, San Francisco.

Salinas Building

Architects Wyckoff & White, Growers Bank building, San Jose, have completed plans and taken figures for a large department store building at Salinas for the Farmers Mercantile Association and also for a one-story addition to the Franci hotel, Salinas. The same architects are preparing plans for a residence in Piedmont, Alameda county, to cost $12,000.

Schirmer-Bugbee Company Active

New work in the office of the Schirmer-Bugbee Company, Thayer building, Oakland, includes a large wholesale commission house, alterations to garage on San Pablo avenue for the Sherman Dry Goods Company, Berkeley; $20,000 residence in Alameda for Mrs. S. J. Ackerman; two houses in Piedmont for Harry P. Fischer and other smaller work.

Building Trades Courses

Two new courses—one in sheet metal work and the other in plumbing—are to be instituted at the Sacramento Shop School this fall. The action of the Board of Education in providing for such courses is in line with the policy that the study of trades should be given attention by the city's educational department.

Personal

Mr. Francis J. Catton has moved his offices from 1445 San Pedro street, Los Angeles, to 504 West Rampart street, in the same city.

Messrs. Malmgren & Carpenter, Rookery building, Spokane, have moved to 404 Empire State building, that city.

Mr. James H. Hoose has moved from 214 Elmwood avenue, Modesto, to 3981 Budlong avenue, Los Angeles.

Mr. James H. Vollmar has moved from 1183 Regent street, Alameda, to 1707 28th avenue, Oakland.

Mr. Edward A. Easomes, Jr., has moved from 454 California street, San Francisco, to 353 Sacramento street.

Architects Shea & Shea have moved into attractive offices at 454 Montgomery street, San Francisco. They were formerly located in the Chronicle building.

John F. Beuttler has moved from 4639 18th street, San Francisco, to 1120 Cabrillo street, Burlingame.

Architect C. E. Perry, Jr., formerly practicing the profession in Vallejo, and later in Los Angeles, is now chief draftsman in the office of Carl Werner, Santa Fe building, San Francisco.

Architect Harold E. Burket and Engineer Leonard P. Wykoff have removed their business offices and drafting rooms to 316-318 Commercial building, 546 Pine avenue, Long Beach.

Architect Louis N. Crawford of Santa Maria has opened an office in the Wade building, San Luis Obispo, in the personal charge of Mr. John C. Pennington.

Architects Samuel H. Dunford and Alexander R. Brandner announce the removal of their offices from the Ferguson building to suite 1020 Lincoln building, 742 South Hill street, Los Angeles.

Architect A. F. Rosenheim of Los Angeles announces the removal of his offices to suite 515 Broadway, Arcade building.

Mr. Paul E. Fernald has been appointed a member of the Arizona state board of registration of engineers, architects, surveyors and assayers. He has been a government mineral surveyor for 14 years.

Mr. Arthur T. Herrman of Seattle, Washington, is now a legally qualified architect, having successfully passed the state examination.

Mr. Daniel R. Huntington has been elected a member of the Executive Committee of the Washington State Chapter, to serve until the next annual meeting.

Mr. Edward A. Eames, Jr., has moved from 454 Montgomery street, to 353 Sacramento street, San Francisco.

Architect C. H. Jensen has moved from the Call-Post building to the Santa Fe building, San Francisco.

Leeds & Barnard, consulting engineers, Central building, Los Angeles, announce their affiliation with Dr. J. A. L. Waddell, consulting engineer of New York city, for the design and supervision of construction of bridges in Southern California, Utah, Nevada, Arizona and New Mexico.

Irrigation System for Madera

Construction of one of the largest irrigation systems in California, which will make Madera county one of the leading producers in the state, is expected to be under way within a year. This is the San Joaquin water storage district, which has been formed after much threatened litigation. The acreage will be 552,000, with some lands in Fresno, Merced and Stanilaus counties.

The reservoir is to be created a mile from Friant. The dam will be the largest in the state — 4200 feet long, 320 feet high, containing 1,500,000 cubic yards of concrete and store 600,000 acre-feet of water. The lake will be eighteen miles long, three miles wide and 300 feet deep. Incidentally, 65,000 hydro-electric horse power will be created.

Oakland Bank Building

Working drawings are being prepared by Architect George W. Kelham, San Francisco, for the Central Bank's new nineteen-story building to be erected on the site of the present bank building at 14th and Broadway, Oakland. H. J. Brunnier is consulting engineer. Construction will start early this fall. Mr. Kelham is also completing plans for the new office building of the California State Automobile Association at Van Ness avenue and Hayes street, San Francisco, estimated to cost $500,000. It will be of reinforced concrete and six stories high.

San Jose Architect Busy

Architect Herman Krause, Bank of San Jose building, San Jose, has completed plans for a $12,000 addition to the garage of the Grenninger Motor Sales Company, 270 West Santa Clara street, San Jose; also, Mr. Krause has made plans for alterations and additions to a two-story brick building at San Pedro and Bassett streets, San Jose, to be used as a branch post office building and for new store fronts for the California Candy Company, Ferguson's Music store and E. Bothwell's jewelry store.

Granted Certificates to Practice

Mr. Kenneth A. Gordon, 200 East Colorado street, Pasadena, has been granted a certificate by the California State Board of Architecture to practice his profession within the state. Mr. Gordon, who is in charge of the architectural department of J. H. Woodworth & Son in Pasadena, was recently awarded a first prize for a small house design, his own home, in the Carmelita Community House Better Homes Exhibit, Pasadena.

Oppose Lien Law

The part of the mechanic's lien which permits material people to sell to anybody claiming to be a contractor regardless of responsibility, and giving them privilege of placing a lien on a job where the material has been used if the bills are not paid, has aroused the antagonism of the general contractors of San Francisco. At a recent meeting the law was declared to be a misnomer and a detriment to responsible business instead of a stimulant, according to Mr. E. T. Thurston, secretary of the General Contractors' Association.

"At this meeting," said Thurston, "it was argued, that under the guise of protection to otherwise helpless workmen from being done out of their wages, the measure was framed to include also, material men, contractors and architects who are no more in need of such a free public collection agency than are merchants and professional men in other lines of business.

"The mechanic ordinarily has no means for ascertaining in advance the responsibility of the person who proposes to employ him, and can not, of course, exact a bond or retainer, but business concerns in other lines have their credit departments and associations wherewith a customer must establish a proper rating before being granted material credit.

"The operation of the present lien law has encouraged loose business methods and extensions of credit to everybody without question, and thus has opened wide the door to anyone who chooses to pose as a contractor. This law is more to blame for shoddy work in building construction than any other influence."

Heights of Brick Courses

The Indiana Limestone Quarrymen's Association of Bedford, Indiana, have published a chart showing heights of brick courses and the book is now available for mailing to architects, draftsmen, etc., who may be interested in having a copy in the drafting room for current use.

Architects and draftsmen may obtain copies of this chart from the Service Department, Box 500, Bedford, Indiana, upon postal request.

On the back of the chart will be found a short article on the detailing of stone reprinted from Pencil Points.

Annual Safety Congress

The Thirteenth Annual Safety Congress of the National Safety Council will be held at Louisville, Kentucky, September 29 to October 3. The safety movement in America, both in industry and in our public life, has made substantial progress during the past year. The 1924 Safety Congress reflects this in the caliber of the programs planned for the different sessions.

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With the Engineers

Engineers' Complete Study of Chimneys, Flues and Fireplaces

THROUGH all the ages of man's evolution from the cave and the jungle, the hearth-stone has remained the symbol of domestic peace, comfort and hospitality. Types of human domiciles have changed in every other respect, but the family fire-side remains to us the physical as well as the spiritual center of the home.

Oddly enough, the development of the modern fireplace, which is essentially today more sentimental than utilitarian, has been slow. In fact, until comparatively recent years, there had been no marked improvement in methods of building chimneys, flues and fireplaces over the methods employed centuries ago. Excavations in Pompeii have disclosed fireplaces of excellent construction, differing only in such features as dampers, ash pits and improved linings, from the best construction of today. The mantel is of very ancient origin, but in all probability its first employment was not for the purpose of ornamentation, but rather to secure better drafts; and the word mantel itself was originally identical with mantle, meaning cloak; and fireplaces in primitive days were sometimes covered with a screen-like device. With greater skill in building chimneys, and especially in creating back walls that improved drafts, the mantels became smaller and were used more for decorative effect.

In Persia, even today, the mantels of fireplaces are placed immediately over the openings and not raised several feet above, as we know them in this country. In some of the northern provinces of Germany and in Scandinavia, where greater dependence was placed upon the fireplace for warming as well as for cooking, the chimneys were made larger and over the fire opening there was usually a deep offset of masonry which afforded space at the top for keeping food warm; and even served as beds. With the introduction of side ovens common to the fireplaces of our own Colonial period, offset spaces became repositories of all manner of family possessions. Thus, the modern mantel seems to have had a duel development. American homes, no matter how elaborately equipped with the most modern heating plants, still retain the open fireplace, and the wood fire typifies the spirit of our family life.

Yet, while the modern fireplace is an indispensable adjunct of the modern home, there is widespread lack of knowledge among home owners, extending even to contractors and architects, in relation to the proper construction of chimneys, flues and fireplaces. In order to present the best scientific thought in relation to this form of construction, engineers of the National Lumber Manufacturers' Association after making a complete study, have published a bulletin as chapter 3, volume 5 of the series of publications entitled "Lumber and Its Utilization," which the Association is issuing. The title of this chapter is: "Chimneys, Flues and Fireplaces." It is being distributed to engineers, architects, city officials, fire chiefs, building inspectors, contractors, and to public and school libraries.

In the preface to the chapter it is pointed out that no single fire hazard affects the home and family more closely than defective chimneys, flues and fireplaces. People do not intentionally live in dwellings harboring a constant hazard of this kind, yet, hundreds and thousands of dangerously defective chimneys, flues and fireplaces are in existence now and new ones are being built every day.

The fire hazard from defective chimneys, flues and fireplaces is common to all forms of dwelling house construction. So-called fireproof materials for exterior walls offer comparatively little protection where combustible objects are contained within the structure.

The bulletin, which contains many architectural drawings, goes into minute detail, but in a way that is easily understood by any one with even the most superficial knowledge of building. The best and safest practices from the standpoint of safety and utility are shown. The engineers of the National Lumber Manufacturers' Association have evolved simple, practical and inexpensive methods to insure the erection of safe chimneys, flues and fireplaces. They emphasize the importance of having communities regulate by ordinance the erection of chimneys, and the enactment of a personal liability statute is urged.

A novel suggestion is made that has received widespread approval among architects. This is the requirement that chimneys be tested before the contractor who builds the chimney takes down his scaffolding. It is recommended that chimneys, old and new, be tested by building a smudge fire at the bottom of the flue,

and while the smoke is flowing freely, closing the flue at the top. Smoke escaping into other flues or through chimney walls indicates openings that should be closed. The present practice of expecting the heating engineer to make the test is faulty, since he usually comes on the job after the scaffolding has been removed. Under such building conditions this smoke test is often omitted or not thoroughly made.

In regard to personal liability the bulletin says: "Europe's last reported average fire loss per capita is about one-fourth that of ours today. Europe enforces personal liability laws for preventable fires, and strives constantly to improve construction methods.

"The following of such simple, practical and inexpensive construction methods as are herein suggested for chimneys, flues and fireplaces, will greatly reduce existing dangerous fire hazard and effect a tremendous saving to individual property and life. To heedlessly ignore such construction practices when once brought to individual attention, is the height of folly and carelessness. For all such wilful carelessness thoughtful people are urging that financial, personal, and corporate responsibility for fires, originating on the owner's premises and due to carelessness and neglect, be made enforceable by statute. The enactment of such personal liability statute should eliminate at least 85 per cent of these preventable fire losses."

Passing of John H. Dunlap

Mr. John H. Dunlap, secretary of the American Society of Civil Engineers, died on July 29, at Chicago, from injuries received in a railroad accident about a month earlier, while returning from the annual convention of the society in Pasadena.

Mr. Dunlap's strong character and long devotion to the broad interests of the engineering profession were known and recognized beyond the immediate circle of his acquaintances. His service with the American Society of Civil Engineers had begun auspiciously, and with prospect of a long and efficient term of office, so that his loss is keenly felt by that organization.

Mr. Dunlap was born Sept. 9, 1882. He graduated from the Thayer School of Civil Engineering at Dartmouth college in 1905. During 1905 and 1906 he was engaged in engineering work with the U. S. Reclamation Service in Nevada. Later he returned to Dartmouth for advanced work in engineering. He was employed by the Pennsylvania Railroad for a short time and also served as field instructor in surveying at Thayer school prior to obtaining his post-graduate degree in 1908. He joined the faculty of the University of Iowa as an instructor, and later became professor of hydraulics and sanitary engineering in the College of Applied Science. He was also engaged in consulting work in civil and sanitary engineering. He was elected secretary of the American Society of Civil Engineers in 1922.

Looking Ahead

A certain young railway division superintendent in the month of August, asked his superiors for three snowplows to be furnished as soon as possible. His request was received with laughter and ridicule. Why was he ordering plows in hot weather? He replied:

"I know my division. I want to be prepared for what will probably come. Send me the plows."

The plows were not sent him. In December his division was overwhelmed with snow, and for the lack of the plows his company at that time lost a large sum of money through inability to keep the right of way open. He was censured in February for not having been prepared for such a situation. He referred his critics to his orders given in August for the plows. That cleared his name and reputation, but it did not restore to the company what it had lost through not looking ahead.

The moral may be applied to other industries besides the railroad. It behooves all of us to look ahead in our plans for more business.

Engineers Promoted

Mr. George R. Winslow of Sacramento succeeds Allan J. Wagner on the California State Highway Commission as assistant engineer in charge of maintenance. Mr. Wagner resigned to accept the position of city engineer of Sacramento. Mr. Winslow was formerly in charge of Highway Division No. 3 with headquarters at Sacramento. F. W. Haselwood, a member of the bridge department of the commission, will take the office vacated by Mr. Winslow.

Appointed Landscape Architect

Mr. Victor G. Anderson, formerly with the Mason-McDuffie Company of San Francisco and Berkeley, has been appointed Landscape Architect for the city of Stockton. Mr. Anderson began his new duties September 1. He will take charge of the extensive park improvements for which $100,000 or more has been appropriated.

Well Put

Student: "What is a consulting engineer?"

Professor: "A consulting engineer is a practicing engineer out of a job."

Field of the Contractor

Is the General Contractor Needed?*

By F. R. BELL, Vice-President Milwaukee Chapter,
Associated General Contractors of America

IT has been said that a general contractor must have sufficient imagination to visualize his work completed when it has just started and to bend all things to that end. He must have a sense of humor, so that he may see the funny side of the people he has to deal with, thereby saving himself from nervous prostration; sentiment to appreciate the dramas and tragedies which daily occur before the eyes; courage to show the way where there are no battle flags flying or war correspondents to relate his exploits, and to take his medicine in silence when things go wrong; tact and wisdom and energy of a good executive and last, but not least, honor to inspire him to deliver a square deal when he might easily profit unfairly with no one the wiser.

Arthur S. Bent, past president of the Associated General Contractors of America said:

"A general contractor is the product of evolution plus personal ability and character. Slowly step by step he has climbed a hard road. He has had many downfalls, but he has learned much and paid with his own money for every lesson. Through much experience he has accumulated knowledge which can come in no other way and he has acquired precedent to guide him through all new difficulties. He knows what tools will best work out his plans and how to use them. He has developed a keen judgment of men and their fitness and through his acquired ability to guide and inspire them he has built up a specialized dynamic organization. Along with his skill he has developed integrity and responsibility so that he absorbs within himself the consequences of such mistakes as he may make and even such misfortunes as befall his work and he is constantly spurred to his maximum efficiency by the necessities of his own financial responsibility. He delivers a specified structure complete in all of its details at the time promised and at the price he agreed."

Is the general contractor needed in the construction industry today?

Is he a necessity? We believe he is.

Contracting once was largely a gambling game that encouraged and developed sharp practices. Today it is a highly systematized business conducted in all of its larger activities upon a scientific basis. Once it operated under crude methods with primitive equipment; today, it succeeds only by the highest efficiency and is supported by a vast organization of designers and manufacturers who furnish it with highly specialized equipment for its efficient conduct. Once it was led by strong but untrained men who by force of character or shrewdness had fought their way to the front. Today its great forces are directed and coordinated by men of trained minds, of sterling character and of the highest ideals. The old unfair contract was the natural development of the old condition; today, it is an obstructive misfit. Architects are devotees of efficiency, are its greatest bulwark. But efficiency in construction will always be based upon the co-operation between architects and contractors and such co-operation must rest upon a fair contract and upon mutual confidence.

The general contractor is the precursor of every form of human activity. He cannot be spared. He, like the architects, is a personal service agent. That is the only thing he has to sell. We are creators, not gamblers. The things other men produce remain only materials, commodities, passing through many hands and growing constantly more costly but not more useful, until finally the contractor takes them and transforms them into permanent structures, accomplishes their final destiny of usefulness to man from which there is no further change. If we fail to do our work well, all that has gone before has failed too. If we do it well, we are the fruition of a thousand hopes.

Is such an agent to be hampered by distrust and injustice? Or should he be upheld and helped and encouraged. Should we secretly rejoice when we get the work of his hands for less than it cost him or should we want him to be well paid for work well done. Should we undermine him and set him aside and find ways to do his work without him or should we build him up in honorable usefulness and strengthen his character and

*Abstract of an address before the Milwaukee Chapter, American Institute of Architects.

his hands for this special service to society?

We believe that the general contractor and the architect have many interests in common and that one is necessary to the other and that greater co-operation between architect and general contractor would result in mutual benefits and compensation. We believe that the owner's interest can best be served and that the grief and worry of the architect will be minimized when a contract for the completion of the entire structure is placed in the hands of a responsible general contractor who by his long years of experience has acquired that special knowledge of how best to handle the many and various problems that often confront him.

The principal function of the general contractor when operating under the single contract plan which has been developed to meet the needs experienced by both public and private owners, consists of furnishing centralized construction management and single responsibility for successful completion of a structure.

The elements of responsibility are manifold and under most existing contracts include protection to the owner from loss due to causes such as the following:

Increased cost of construction.
Delay in completion.
Injury to workman and the public.
Patent infringements.
Injury to adjacent property.
Damage from the elements and acts of God.
Imperfect material and workmanship.
Liens and abuse of lien laws.
Default on subordinate contracts.
Unknown underground conditions.
Demand for extortionate wages.
Fire and theft.
Labor, material and transportation shortage.

When separate contracts are used, much of their responsibility is placed directly upon the owner and considerable of the grief carried by the architect.

It is unreasonable to expect the carpenter, steel, plasterer or other separate contractors to carry on their separate parts of the work in their proper relations, giving service and expediting matters as they should be unless there is a positive governing head.

It is manifest that misunderstanding and errors will occur where there are so many different contractors responsible only for their portion of the structure and that the responsibility is easily shifted from one to the other—and the net result is not serving the owner's best interest and often resolves itself into entanglements which are not always easily remedied, and sometimes even places the safety of the structure in jeopardy.

I have previously stated that the interest of the owner can best be served by the architects placing the entire contract in the hands of a responsible general contractor, and I think perhaps it would be well at this time, to define a contractor's responsibility for that is what the owner must lean on most heavily.

I believe the following requirements are absolutely essential in a responsible contractor:

He should have knowledge acquired by the actual experience in executing contract.

He should have knowledge acquired equipment definitely available for any and all work when he submits his bid.

He should have sound and liquid assets of a net worth of no less than 25 per cent of all work under way including the new work on which he is bidding.

His moral credit and assets should be a sufficient guarantee for the completion of the work regardless of a surety bond.

He should have a clean record of past contracts satisfactorily fulfilled.

And last, he should have a general high reputation, founded on consistent performance and good character.

Annual Meeting, A. C. C.

The annual meeting of the American Construction Council fo 1924 will be held on October 2nd and 3rd in New York City.

Aside from the regular business sessions of the Council and the meetings of the board of governors and its executive committee, the following subjects are among those on the program for the general sessions:

1. BETTER BUILDING:—Discussion of ways and means to insure better quality of construction and the promotion of greater responsibility among all elements having to do with construction. Report of the Council's committee on better building.

2. ENGINEERING CONSTRUCTION: — Discussion of fundamental relationships between the elements of the industry pertaining to engineering construction, including field projects, highway construction, public carriers, etc.

3. APPRENTICESHIP: — A survey of the apprenticeship movement for the building trades throughout the country. Report of the Council's committee on apprenticeship and its affiliated groups.

4. THE BUILDING CONGRESS MOVEMENT: — Group meeting of the various local Building Congresses throughout the country. Discussion of principles and procedure underlying the organization and administration of Building Congresses for given localities.

Big Order for Brick and Tile

The United Materials Company, 55 New Montgomery street, San Francisco, reports that it has been awarded some extensive contracts on the new Pacific States Telephone building now under construction on New Montgomery street, between Mission and Howard streets, San Francisco. The order includes approximately one-half million white enamel brick, manufactured by the Los Angeles Pressed Brick Company; between one and two million Port Costa

common brick and about 100,000 partition tile. An excellent picture of the new building is shown in the page advertisement of the United Materials Company in this issue.

Steel Company Busy

Mr. P. F. Gillespie, sales manager of the Judson Manufacturing Company of San Francisco, reports that the structural steel business has been considerably better during the past year than for some time previous.

The Judson Manufacturing Company is well equipped to do all classes of structural steel fabricating. They use only domestic steel and carry several thousand tons of structural material in stock which enables them to make immediate delivery of rush work.

Their rolling mills, foundries, bolt and forge shops manufacture practically all classes of material used in steel construction.

The following is a partial list of over 150 contracts obtained by this company during the past year:

The Pacific Portland Cement Company, Gerlach, Nevada.

Santa Cruz Portland Cement Company, Davenport, California.

Pacific Telephone & Telegraph Company, Richmond, California.

Westinghouse Electric & Manufacturing Company, Emeryville, California.

Pacific Gas & Electric Pitt River Power House Number 3, Bartell, California.

Coit Hotel, Oakland.

Athens Athletic Club, Oakland.

Pacific Gas & Electric Company general office building, San Francisco.

Pacific Telephone & Telegraph Company division office building, San Francisco.

The last two jobs listed were taken in conjunction with the Pacific Rolling Mills Company of San Francisco.

Fixture Company Enjoys Growth

A record of most satisfactory growth is displayed by the Built-In Fixture Company of Berkeley, which held its annual meeting the past month.

The company manufactures about fifty different articles of built-in furniture, including folding wall tables, folding wall seats, ironing boards, cupboards, medicine closets and a number of special combination fixtures. All of the devices are standardized in manufacture as well as installation and are interchangeable so that they can be arranged in assemblies, much after the fashion of sectional bookcases.

Starting with monthly sales of $1300 in 1920, the business has grown with ever increasing rapidity, the sales for the year ending July 31 totaling $150,981.

The company employs forty-five people and has over $100,000 capital in use. Dealers are maintained in California, Oregon, Washington, Idaho, Utah, Texas, Arizona, Colorado, Hawaii, Mexico, Wyoming, Georgia, Ohio and Alabama.

Want Contract Annulled

An action to set aside a contract given by the Hanford city trustees to Oscar F. Abbott of that place for installation of electrical equipment in the auditorium will be brought, according to Lewis H. Smith of Fresno, attorney for the Fresno Electrical Company.

The action will be instituted, he said, upon the ground that Abbott was not the low bidder for the work, but that the Fresno Electrical Company was and that the trustees had no right to reject any or all bids because they were for identical work. The Abbott bid was $4,750, while the Fresno firm's bid was $3,175, it was stated.

After Unscrupulous Builders

Criminal action, in place of the customary civic action against unscrupulous building contractors, will feature a six months campaign launched September 1 by the Los Angeles Builders' Exchange to protect home builders in Southern California, it is announced by Paul Langworthy, exchange secretary. The motive of the campaign is to drive from the city contractors who absorb payments of home builders and then fail to pay material bills, permitting liens to accrue against the owners.

Big Electrical Contract

The contract for the electrical installation in the new twenty-eight story Coast Division building of the Pacific Telephone & Telegraph Company, has been awarded to the Butte Electrical Equipment Co. Felix Butte, 530 Folsom street, San Francisco, for $149,000. This contract is the largest electrical installation in any building on the Pacific Coast.

Gladding, McBean In New Offices

Gladding, McBean & Company have moved their general offices in San Francisco from the Crocker building to the fifth floor at 660 Market street, a new structure just completed by the Dinwiddie Construction Company, from plans by Architect Lewis P. Hobart.

Central Library, Los Angeles

The Clinton Construction Company, San Francisco, has been awarded a contract to build the new Central Library at Fifth street and Grand avenue, Los Angeles, for $1,351,400. The plans were made in the office of Bertram Goodhue and Carleton M. Winslow.

Store and Lodge Building

Architect Joseph L. Stewart, Claus Spreckels building, is preparing plans for a three-story frame store and lodge building to be erected at Ocean and Ashton avenues, San Francisco, for Mt. Davidson Lodge No. 481. It is estimated the building will cost $50,000.

Improved Method of Laying Hardwood Floors

By B. E. BRYAN, Sales Manager, Strable Hardwood Company, Oakland

CONTRACTORS can effect an actual saving in final cost and avoid an enormous amount of annoyance in installing hardwood floors by keeping the base up from the sub-floor, so that the top floor may be laid under the base all around the room and finished with a base shoe.

There are but four (4) thicknesses of oak flooring, viz: 13-16 inch, 1-2 inch, 3-8 inch and 5-16 inch, and as the thickness of the flooring to be used in any particular building is always pre-determined, there should be no question in setting the base as outlined above, when the finish is put in.

All oak flooring is loaded into cars at the factory with a 6 per cent moisture content. This content increases slightly during the time of transit and while in storage in the bay region, and in most cases, probably reaches the job with a moisture content of 7 1-2 or 8 per cent.

The tendency of wood to absorb moisture from the surrounding atmosphere is an axiom and need not be discussed here. However, it can be pointed out that by placing this kiln-dried material in a dwelling which has not had time to thoroughly dry out after the plaster has been put on, more or less expansion will invariably result. This expansion is not great enough to buckle the flooring between the nailings, provided it has room to move slightly under the baseboards.

This raising of the baseboards will not add, in any way, to the cost of putting them up, and the base shoe is so inexpensive as to be negligible. The floorlayer can finish the base shoe at the same time that he finishes the floor surface, consequently, it would not be necessary to have the painter come back for any retouching in this connection after the floor is laid.

To the casual reader, this subject may not seem of much importance. However, if it could be realized how many thousands of dollars are lost each year by the necessity of going back and re-scraping and finishing floors which have slightly buckled for the reason that they have been laid tight from base to base, and if also the thought could be left with the reader, that all of this could be eliminated without additional expense, it would immediately be seen that this subject is one of tremendous importance.

There is also the sale value of a floor that has been properly laid and stays down flat. No purchaser is entirely satisfied with a floor that has to be reworked, consequently, taken from any angle, it is difficult to understand why the method of laying floors outlined above is not more generally followed.

Place Responsibility on Owner

A joint committee on structural safety representing the architectural and engineering societies of the New York metropolitan district has recommended for consideration by the various societies proposed laws whereby the committee believes the safety of buildings may be assured. These recommendations are contained in the following resolution:

Resolved, That it is the judgment of this committee on structural safety that a law should be prepared to embody the following requirements, governing the granting of permits and the execution of all building operations.

The owner shall be the applicant for the building or construction permit and shall be required to accompany his application for such a permit with the following:

(1) Adequate plans and specifications prepared and signed by a competent registered architect or a licensed professional engineer experienced in structural design, hereinafter called the designer.

(2) A definite undertaking executed in legal form stipulating that, if the permit is issued to the applicant, he will have all working or shop drawings covering parts and details essential to the stability of the building and required to supplement the plans which accompanied his application, fully checked, approved and signed by the designer; that he will place the execution of the work under the direct supervision and continuous control of the designer; and that he will further undertake, with the co-operation of the designer and by employing only competent contractors and workmen, to perform faithfully the work proposed in strict accordance with the plans and specifications, in compliance with all requirements of law, and with due regard to public safety.

(3) Before a certificate of occupancy is issued by a bureau of buildings, or by any state or local authorities having jurisdiction, the owner shall furnish to such authorities a duly executed certificate, signed by the designer, stating that he has faithfully supervised the entire work of construction, that it has been executed in accordance with the plans, specifications and working drawings duly signed by him, and that to the best of his knowledge and belief the finished work complies with the requirements of law and is structurally safe for the use specified.

Failure on the part of the owner to comply with any of the above specified requirements shall be regarded as presumptive evidence of a violation of law, constituting a penal offense, and shall be punishable as such.

(4) If at any time after the certificate of the designer has been filed, conclusive evidence is furnished to the state licensing authorities that any statement in such certificate was false and intended to deceive, these authorities shall immediately take the necessary legal steps to have the signer put on trial for perjury, shall forthwith have his name stricken from the list of registered architects or licensed professional engineers, and shall give their action effective publicity.

(5) It should be made possible at any time during the process here outlined to substitute a new owner for the orginal owner, provided that the new ownership is duly recorded on the original papers by affidavit and such new owner assumes all the obligations that would have been his had he signed the original papers. Likewise a new registered architect or licensed professional engineer having structural experience may be substituted for the original designer of record provided that a like transfer of all obligations shall be recorded on the original papers and these obligations be assumed by the new registered architect or licensed professional engineer as if he had signed the original plans.

NEW HOME OF LAWSON & DRUCKER, SAN FRANCISCO

Plumbing and Heating Contractors in New Home

A new building has just been completed and occupied by Lawson & Drucker, plumbing, heating and automatic sprinkler contractors of San Francisco. The building is at 465 Tehama street and has been especially designed to serve the needs of the concern. The structure occupies ground area 50x80 feet, with a well appointed shop on the ground floor and offices and estimating room on the second floor. In the rear is the storage warehouse and yard, 50x80, with an entrance on Clementina street. The ground floor of the main shop is given over exclusively to pipe cutting and shredding and for the storage of smaller classes of fittings. The heavier and more bulky supplies are carried in the warehouse section. All pipe machinery is directly connected with motors, doing away with belting and counter shafts. Both the shop and warehouse are equipped with a fire sprinkler system, the firm being exclusive handlers of the Nacey line of sprinkler devices.

Among the important contracts completed by Lawson & Drucker in recent months are the following: heating system in Huntington Apartments, Weeks & Day, architects; plumbing in the Hotel Senator, Sacramento, MacDonald & Couchot, architects; heating in the Federal Reserve Bank building, Geo. W. Kelham, architect and P. J. Walker Co., builders; plumbing and heating in the apartment house at Jackson and Laguna streets, C. A. Meussdorffer, architect; heating, Growall Apartments, Chestnut and Larkin streets, Wm. Knowles, architect; heating California Commercial Union building, Pine and Montgomery streets, San Francisco, Geo. W. Kelham, architect; sprinkler systems in the Bass Heuter Paint Co. factory, Lincoln Realty building, at 5th and Market streets, Meadow Brook building, Market near 6th street, and the Westinghouse factory and warehouse, Emeryville, the latter a plumbing installation.

The firm of Lawson & Drucker has been in business for the past 2½ years, being formed after the dissolution of

COMMODIOUS SHOP IN NEW HOME OF LAWSON & DRUCKER

partnership of James & Drucker. For the past two years their shop has been located at 450 Hayes street, which was found to be inadequate to take care of the growing business.

Contractor Vaughn Returns

Merritt C. Vaughn, former Oakland contractor, was taken into custody in Los Angeles last month. His arrest followed the issuance against him last January of a secret indictment by the federal grand jury. Vaughn was found working as a carpenter in a suburb of Los Angeles.

In 1922 Vaughn was awarded the contract by Alameda county for the new $480,000 Highland hospital. The hospital contract proved to be a losing venture, and, before it became known to the public that his creditors had filed involutary petitions in bankruptcy against him, Vaughn, it is alleged, realized on all his assets and disappeared.

A warrant on the county treasurer for $45,000 was drawn, and he withdrew the balance on his bank account before leaving, according to evidence placed before the department of justice.

Following Vaughn's disappearance the county, county officials, and the Globe Indemnity Company, security bondsmen for Vaughn, were made defendants by contractors and material dealers in suits

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Published Monthly by
THE ARCHITECT and ENGINEER Inc.
626-627 Foxcroft Building-San Francisco
W. J. Kierulff, President — Frederick W. Jones, Vice-President — L. B. Penhorwood, Secretary

HOUSE FOR MR. CHARLES C. KEENEY, PIEDMONT, CALIFORNIA
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Frontispiece
The Architect and Engineer
October, 1924

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OCTOBER
1924

VOL. LXXIX
No. 1

Suburban Reflections

By IRVING F. MORROW

SINCE the mediaeval poet inquired as to the whereabouts of last year's snows, people have continued to echo his plaintive query in the most diverse connections, as a symbolical expression for transitoriness and insubstantiality; and after fingering through Messrs. Newsom's delightful photographs of current and recent suburban architecture, I have become reflective in my own turn, and feel impelled to ask, Where are the suburbs of yester-year?

For, of course, fashionable and popular suburbs are not contemporary manifestations. Realtors of today may have become more insistent in urging them; but, under one condition or another, growing cities must always have had attractive outlying areas which aimed at distinction and exclusiveness. I can recall districts which in my childhood were much in vogue. I even remember how, retiring in nature and brought up as I was in slight contact with the world of high fashion, these districts assumed an authority which was penetrated not without a vague sense of reverence and awe. I shall not name them now, for people still live there. And of course, there were "swell" suburbs which antedated these. My parents used to point out the places which were "the" parts of town of their day. And now and again, after the lapse of time, when chance brings me back into these superseded districts, I ask myself (in substance if not in form), Where are the suburbs of yester-year?

It must be admitted that last year's snows possessed the not inconsiderable advantage of disappearing when their usefulness had passed. The suburbs of our youth do not quietly melt and evaporate; they linger on after the waning of their glory. Yet it is not the subsequent misfortunes of these districts which render them so melancholy a spectacle. Certain urban transitions, as from residence to apartment, or small commercial districts, are, when half under way, painful both physically and esthetically. But in general there is no inherent reason why senescence in cities should be a less dignified or agreeable process than in persons. It is conceivable that the surrounding of a suburb by

the onward march of a community may dim its social prestige, but it should not thereby be rendered a depressing sight. Social values are precarious, but not real architectural ones. Genuine design, be it in or out of the current mode, will always survive changes in taste and point of view. To the modern observer the most astonishing thing about these fallen suburbs is that their houses should once have excited the admiration and the emulation of whole communities.

People philosophically inclined but not architecturally trained are generally skeptical regarding such an intimation that the quality of architectural design among us has improved. The last generation's houses, they say, appear ridiculous for the same reason that its clothes excite derision; because they are out of style. The houses of today appear reasonable and agreeable because they are in style; but styles are always changing, and our suburbs will be as depressing to our successors as those of our ancestors are to us.

To an artist this is surely a discouraging contention, and I do not for

HOUSE FOR MR. DUDLEY DEXTER, PIEDMONT, CALIFORNIA
Sidney B. and Noble Newsom, Architects

a moment believe that it is justified. Esthetic values are independent of fashion. To a sensitive observer, a poor design will appear disagreeable even though "in style", and a good design will be pleasant though outmoded. The suburbs of yester-year irritate us because they flourished at a time when architectural design among us was at a disgracefully low ebb. People were indifferent to good architecture, did not demand it, and did not know whether or not they had it. Generally they didn't. Many of the largest "mansions" emanated from the offices of building contractors. Planning was inept and design unimaginative. Mass and proportion were unrecognized quantities, and detail was perfunctory and tasteless. And the significant thing is that these conditions were not regarded as anomalous, but were normal.

Today there is not only a larger number of competent designers, but a public which, for all its esthetic shortcomings, is at least to some

degree more inclined to appreciate their efforts. Poor work is done in disconcerting quantities, but the proportionate volume of interesting design has certainly increased. Planning has become sensitive to both physical and personal demands, (witness the variety among those printed on the following pages), and design has become a means of expression. In short, the suburban house has risen from the catagory of "building" into architecture.

The change in attitude and resulting form is nowhere better exemplified than in these houses by Messrs. Sidney B. and Noble Newsom. They bid for acceptance as serious architecture, and stand in no need of apology or explanation. Each and every one evidences genuine architectural preoccupation—careful and imaginative planning, and expressive design. They embody a refreshing breadth of outlook, which places them entirely outside the petty circle of mere fashion; no unseemly trick of time will impair them as livable homes for cultivated people. They represent worthy ideals measurably attained.

HOUSE FOR MR. ARTHUR G. TASHEIRA, PIEDMONT, CALIFORNIA
Sidney B. and Noble Newsom, Architects

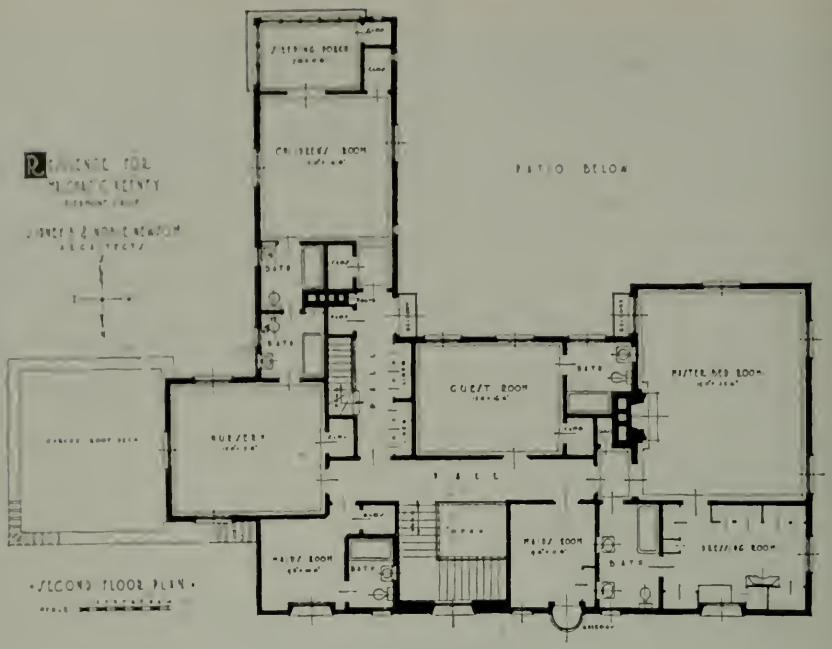
Styles may change and cities may grow. I can imagine a time when the present frontiers of Piedmont will be well within town, and cultured and prosperous people will be building houses of a new stamp on the summit of the hills and beyond. When such a time arrives, today's suburban houses may be inhabited only by relics of conservative or financially deflated families, or even occupied as boarding houses; in short, it will doubtless no longer be "the thing" to live there. But I am sure intelligent people of that time will not deprecate houses such as those of Messrs. Newsom as stupid, unimaginative, tasteless, ugly, or any of the other epithets, to use only the mildest, which we might apply to the suburban "mansions" of yester-year. Rather will they be grateful for authentic relics of fresh and stimulating artistic thought of a time when architecture was coming into its own as a really serious and worthy concern.

HOUSE FOR MR. CHARLES C. KEENEY, PIEDMONT
SIDNEY R. AND NOBLE NEWSOM. ARCHITECTS

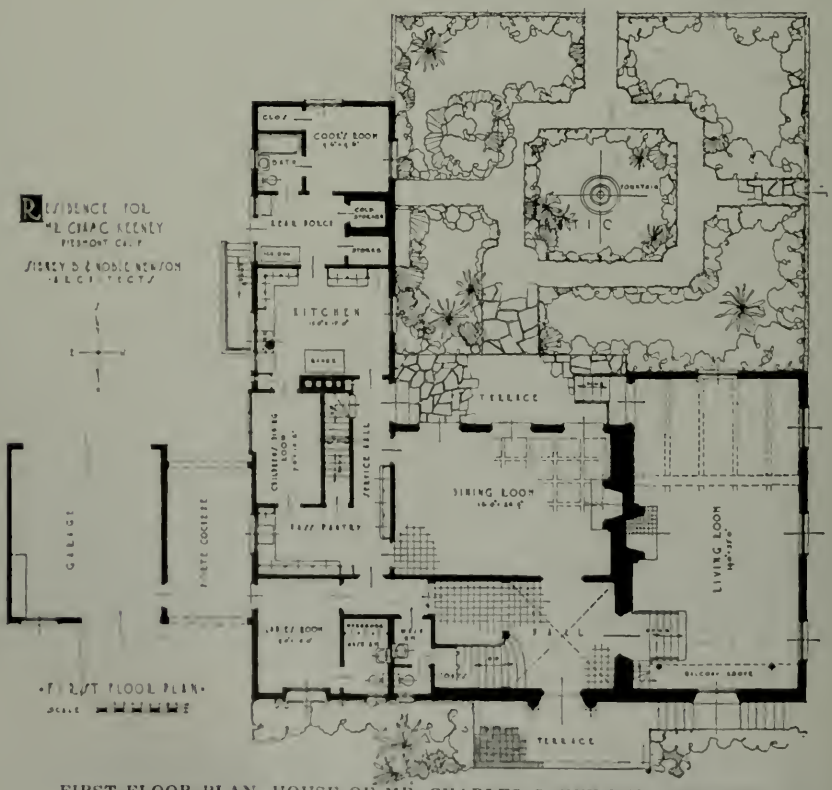
HOUSE FOR MR. CHARLES C. KEENEY, PIEDMONT
SIDNEY B. AND NOBLE NEWSOM, ARCHITECTS

HOUSE FOR MR. CHARLES C. KEENEY, PIEDMONT
SIDNEY B. AND NOBLE NEWSOM, ARCHITECTS

HOUSE FOR MR. CHARLES C. KEENEY, PIEDMONT
SIDNEY B. AND NOBLE NEWSOM, ARCHITECTS

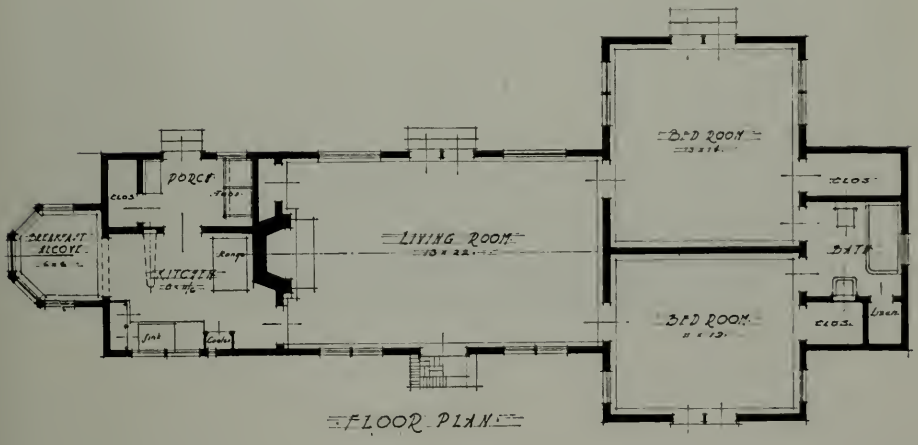


SECOND FLOOR PLAN



FIRST FLOOR PLAN, HOUSE OF MR. CHARLES C. KEENEY, PIEDMONT
Sidney B. and Noble Newsom, Architects

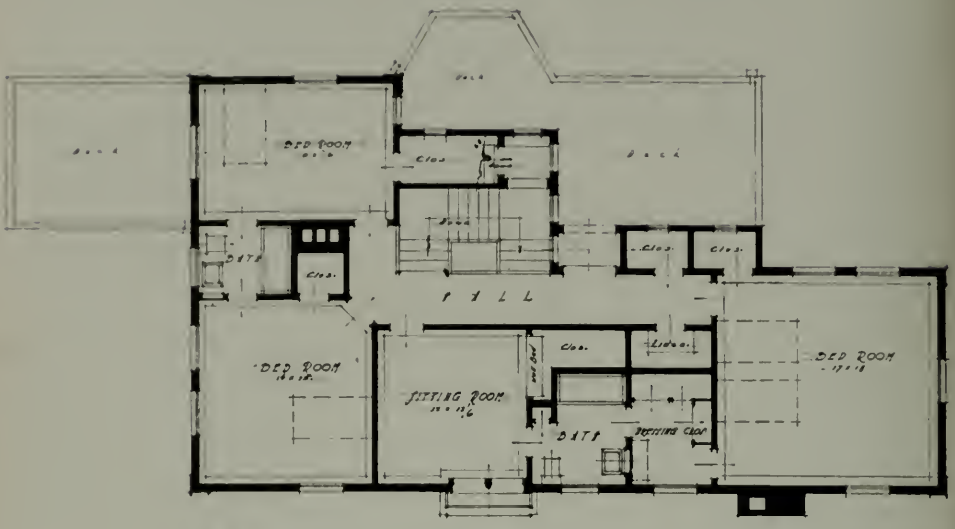
PLOT PLAN, HOUSE OF MR. CHARLES C. KEENEY, PIEDMONT
Sidney B. and Noble Newsom, Architects



PLAN, HOUSE OF MR. H. K. GORDON, BERKELEY, CALIFORNIA
Sidney B. and Noble Newsom, Architects

HOUSE OF MR. H. K. GORDON, BERKELEY, CALIFORNIA
SIDNEY B. AND NOBLE NEWSOM, ARCHITECTS

HOUSE OF MR. F. L. McCAFFERY, PIEDMONT, CALIFORNIA
SIDNEY B. AND NOBLE NEWSOM, ARCHITECTS



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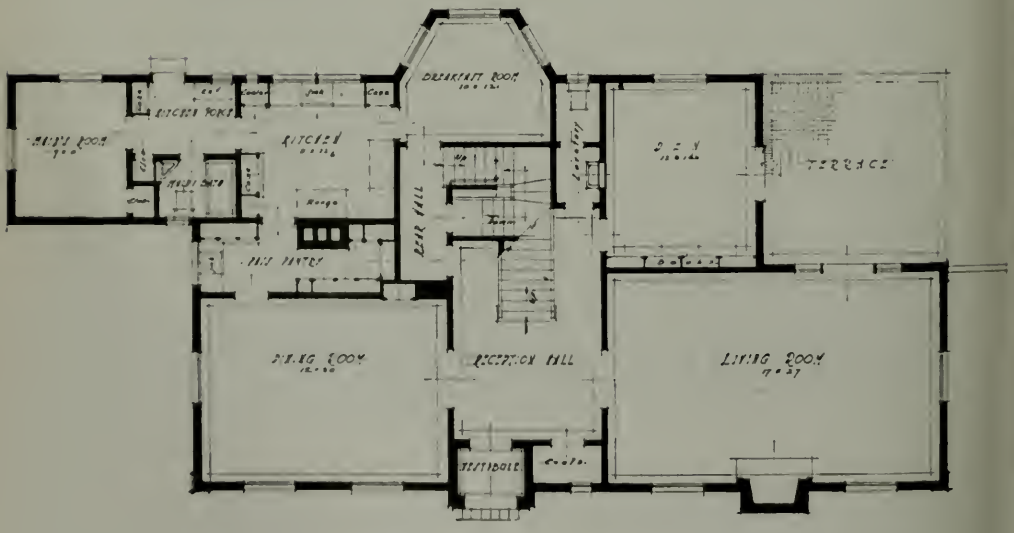

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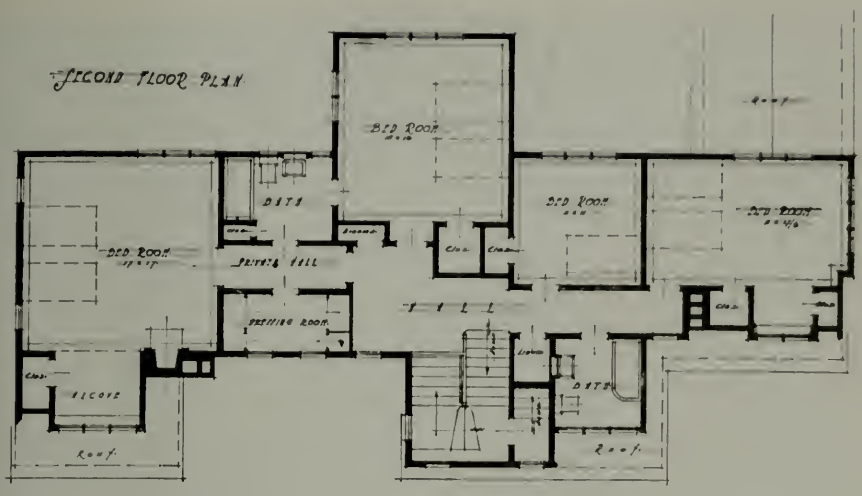
Sidney B. and Noble Newsom, Architects



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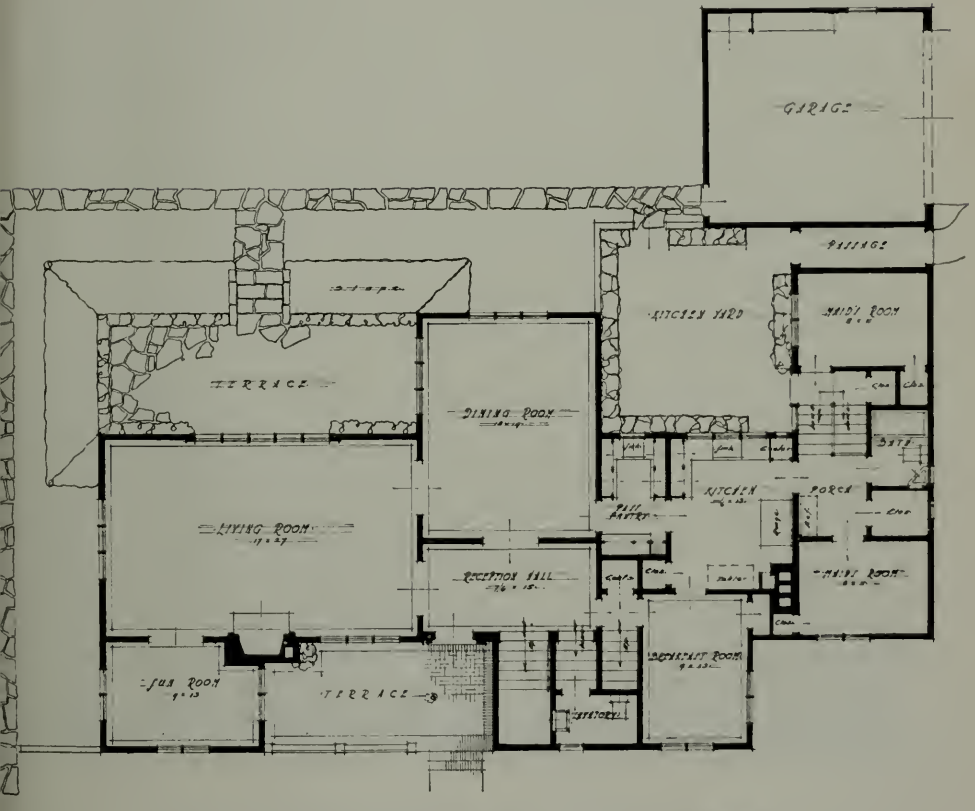
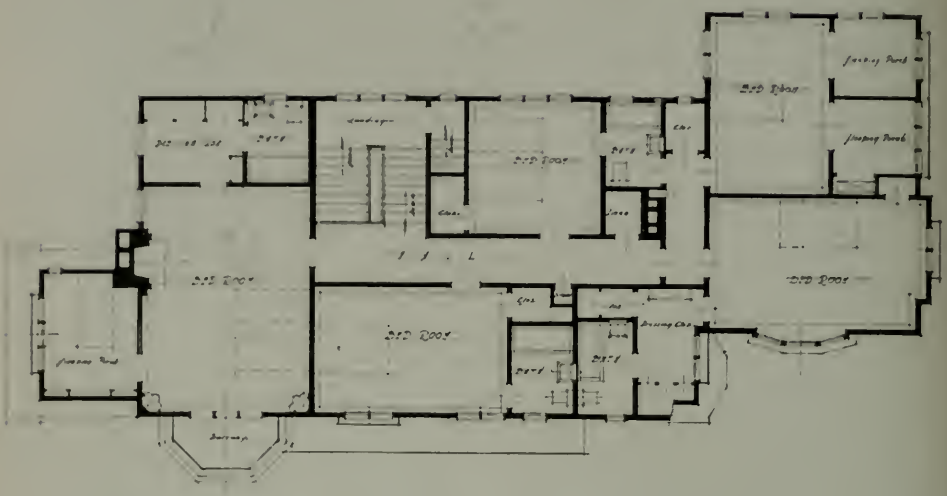


FIRST FLOOR PLAN, HOUSE OF MR. H. S. MAGEE, PIEDMONT
Sidney B. and Noble Newsom, Architects

HOUSE OF MR. H. S. MAGEE, PIEDMONT, CALIFORNIA
SIDNEY B. AND NOBLE NEWSOM, ARCHITECTS

HOUSE OF MR. H. S. MAGEE, PIEDMONT, CALIFORNIA
SIDNEY B. AND NOBLE NEWSOM, ARCHITECTS



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FIRST FLOOR PLAN, HOUSE OF MRS. G. T. HENSHAW, PIEDMONT
Sidney B. and Noble Newsom, Architects

HOUSE OF MRS. G. T. HENSHAW, PIEDMONT, CALIFORNIA
SIDNEY B. AND NOBLE NEWSOM, ARCHITECTS

HOUSE OF MRS. G. T. HENSHAW, PIEDMONT, CALIFORNIA
SIDNEY B. AND NOBLE NEWSOM, ARCHITECTS

HOUSE OF MR. GEORGE W. BAKER, PIEDMONT, CALIFORNIA
SIDNEY B. AND NOBLE NEWSOM, ARCHITECTS

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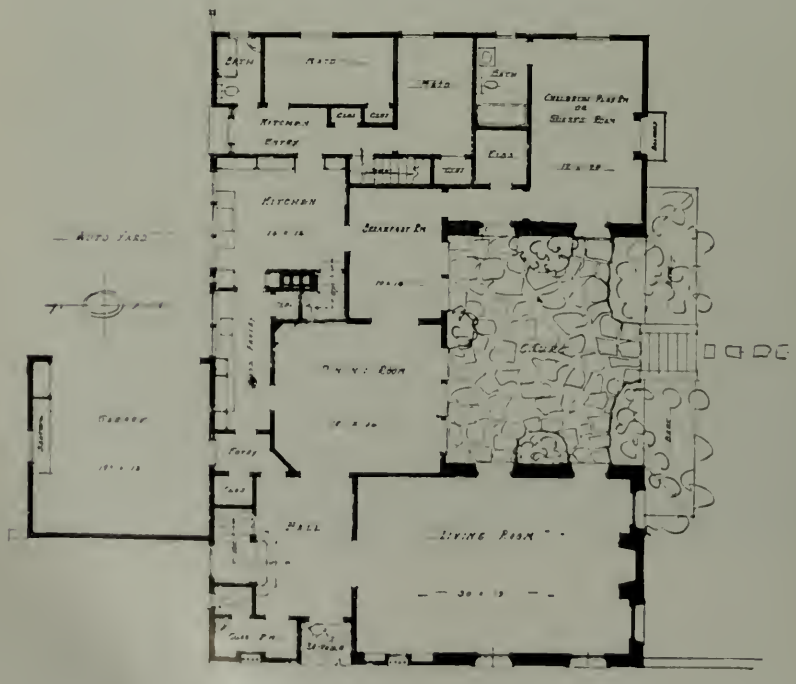
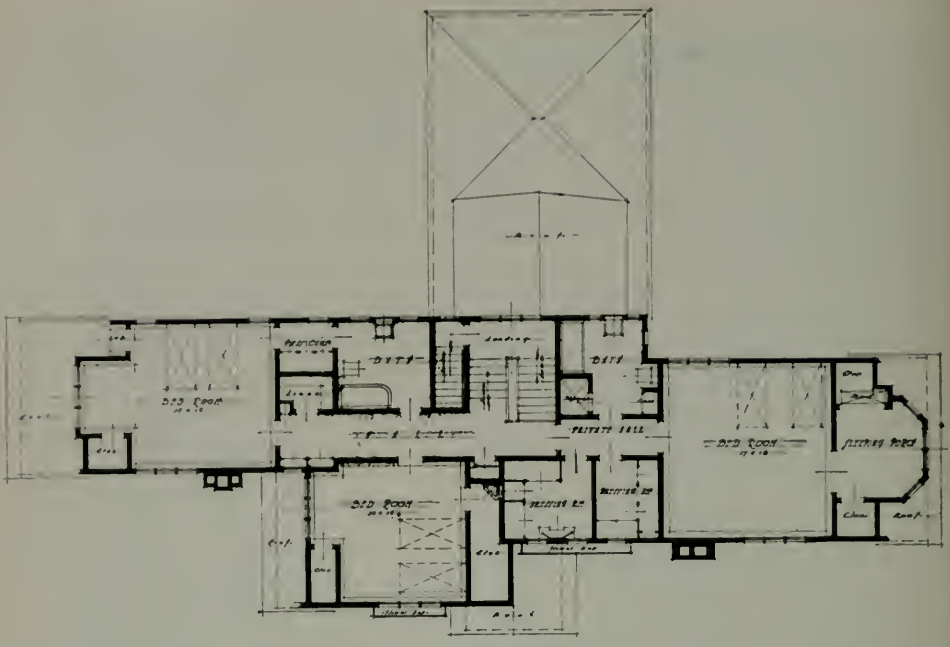


FIRST FLOOR PLAN, HOUSE OF MR. GEORGE W. BAKER, PIEDMONT
Sidney B. and Noble Newsom, Architects

HOUSE OF MR. GEORGE W. BAKER, PIEDMONT
Sidney B. and Noble Newsom, Architects

HOUSE OF MR. A. L. PIPER, PIEDMONT, CALIFORNIA
SIDNEY B. AND NOBLE NEWSOM, ARCHITECTS

HOUSE OF MR. A. L. PIPER, PIEDMONT, CALIFORNIA
SIDNEY B. AND NOBLE NEWSOM, ARCHITECTS



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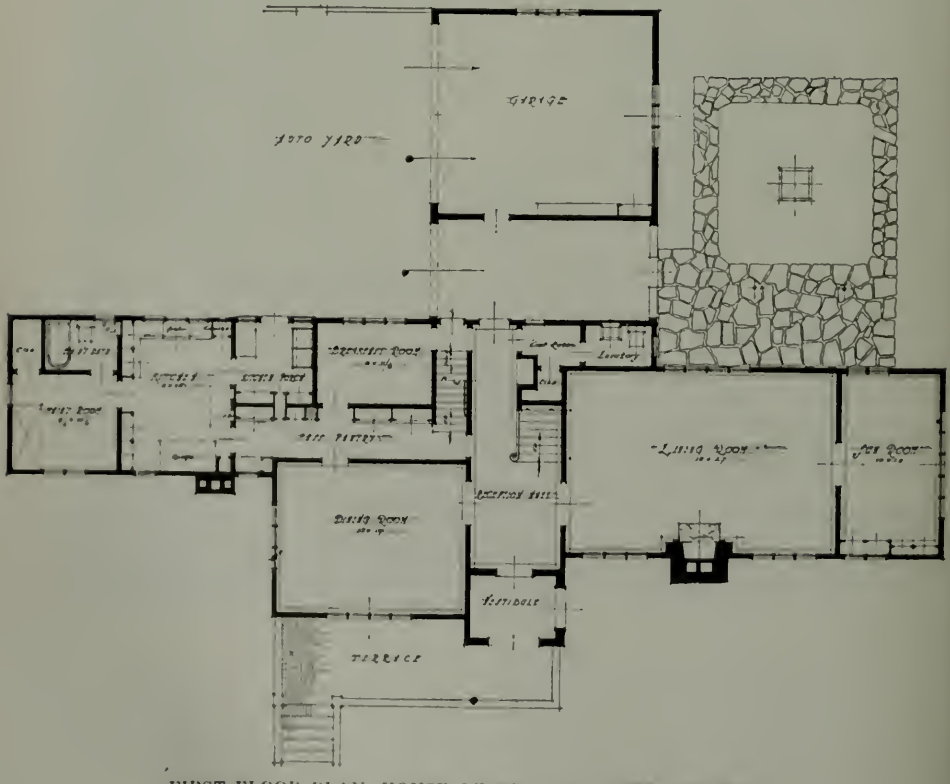


FIRST FLOOR PLAN, HOUSE OF MR. A. L. PIPER, PIEDMONT
Sidney B. and Noble Newsom, Architects

A Tribute to Mission Style

By FELIX REY

ON Piedmont Heights, overlooking the Bay of San Francisco, is a charming Mission style school building. Before its main entrance of simple beauty is a sort of patio, a partly closed-in garden, set with well cared-for plants and bordered at right and left by a series of plain round arches set in smooth plastered walls. This restful patio imparts to teacher and pupil a gentle, peaceful mood, similar to that which the Mission buildings of old impressed upon padre and neophyte. Beyond the patio arches lie the playgrounds from which are seen the graceful curved pediments, the variation of star-window and the curved-tile roofs—all silently but perpetually conveying Mission feeling. Flanking the south playground is an annex; a building devoted mostly to manual training. It is thoroughly Mission, having at one corner a small bell-tower which is strongly reminiscent of the one at Mission Carmel. Those Mission forms, that Mission bell, convey ideas and feelings of mildness and peace not unlike those which once inspired the simple Indian when he labored and learned his trade in view of the Mission arches, guided by the Mission bell and the voice of the padre.

Even of themselves the simple Mission forms calm mind and heart; but if the story of our early Missions is once well imparted to the children of a well-designed Mission-style school and the derivation of its forms pointed out, those forms and the memory of them will keep that story in their minds for life.

Architecture is not merely a mechanical art. It is very, very close to whatever is human. In its own abstract way it will express even the sublime. If fervor for the object and for the function of a building burn in the heart of the builder, it will, in some indefinable way, appear in his work. George Wharton James, in his book, "In and Out of the Old Missions," says that several of the old Missions are "prominent expressions of architectural zeal and fervent affection." "San Luis Rey," he says, "reveals the builder's love . . . . San Juan Capistrano, in its pristine grandeur, surpassed perhaps all the others. Even the ruins speak eloquently of the love and devotion of its builders. . . . San Antonio de Padua, although built of brick and adobe, was a structure reared by affection; . . . throughout the building the lavish care and love of the priestly builder are evident. By reason of the short lives of these buildings, such indications of affection are intensely pathetic. What visions of centuries of power and influence must have cheered the faithful sons of Holy Church as they planned the structures destined so soon to crumble into ruin through the neglect of a ruthless people. But is love ever lost? Can affection ever be bestowed in vain? Only in the assurance that love is never really wasted, can we find comfort, as we stand in the presence of these eloquent ruins." And of San Carlos Carmelo he says, "Here Serra's power and love are felt, since this building was the object of his adoration. While the whole California field, in its wider sense, occupied his heart and energy, it was upon Carmelo that he expended his most immediate affection. This was his home, his special abiding place; therefore tower, star-window, arches, columns and walls evidence his influence."

Besides being in wonderful accord with California landscape and climate, the Mission style always recalls the heroic work of our early missionaries. No style is more appropriate for California which has been so beautifully called the Mission State. This is especially true for churches and schools, for all institutions of a social or religious character and not less for clubs and private residences. This style is dis-

tinctive of California; it will make California the more distinguished, the more it is used. Said a certain pastor very emphatically to his architect after having discussed with him the various styles of architecture in order to select one for his new school: "Romanesque is grand, yes; Gothic is very spiritual, that's true; but give me neither Romanesque nor Gothic; much less Italian Renaissance, and least of all English Colonial—this is California—give me Mission."

* * * *

Pine Lumber Industry in California

THE following presentation of the present situation in the pine lumber industry of California and southern Oregon was recently issued by the California White and Sugar Pine Manufacturers Association and will be found to be of much value to distributors and consumers of lumber from that region:

"The pine lumber industry of California and southern Oregon has passed through exactly the same periods of ups and downs as have applied to lumber manufacturers generally throughout the country. The law of supply and demand is inflexible when applied to competitive commodities and invariably operates on lumber. In response to abnormal demands last year the industry laid plans for full production in 1923. Ordinarily in this region the peak of production is reached during September or October and from then on diminishes gradually to the end of the year. Indications are that this year the peak of production was reached in June and although the first half of the year 1923 showed a substantial increase in lumber cut, the net result of the year's operations will probably be approximately normal, due to this curtailment.

"Shipments of lumber from this region up to August first, have shown an increase over the first half of 1922, although the rate has lately decreased as mid-summer always results in a cessation of buying. In spite of the very satisfactory volume of shipments, the exceptionally large production during the first six months of 1923 has resulted in slightly less than a 25 per cent increase in total inventories on August first, as compared to the same date in 1922. In view of the fact that this region is being called upon each year for a larger volume of lumber to replace the gradually diminishing supply in the older lumber producing states, the amount on hand should be about right to take up this slack and from a statistical standpoint therefore, the local industry is in a very satisfactory condition. It is true that the percentage of different grades making up present inventories is somewhat out of line due to an exceptionally heavy local demand for box lumber and lumber for general building purposes. The slump in eastern building naturally reacted in increasing stocks of factory lumber to some extent, but this merely delays the movement of these grades until such time as the backed up demand, which is certain to come, develops. Since the manufacturers have been so successful in moving a large amount of low grade lumber they are not so vitally interested in the relatively small amount of upper grades which have accumulated.

"From the lumber users standpoint, the present situation should be exceptionally satisfactory since the mills are in a position to furnish well assorted and well seasoned stocks. Local lumber manufacturers feel that conditions throughout the country are fundamentally sound and that it is simply a matter of time before the demand will again tax the industry to its capacity. The fact that this region produces such a large percentage of the total soft pine available places the manufacturers in a particularly desirable position."

A NEW CLUB BUILDING

— IN —

SOUTHERN CALIFORNIA

Portfolio of the

Friday Morning Club of Los Angeles

Allison & Allison,
Architects

LECTURE ROOM, FRIDAY MORNING CLUB
ALLISON & ALLISON, ARCHITECTS

FRIDAY MORNING CLUB OF LOS ANGELES
ALLISON & ALLISON, ARCHITECTS

ENTRANCE, FRIDAY MORNING CLUB
ALLISON & ALLISON, ARCHITECTS

ENTRANCE, FRIDAY MORNING CLUB
ALLISON & ALLISON, ARCHITECTS

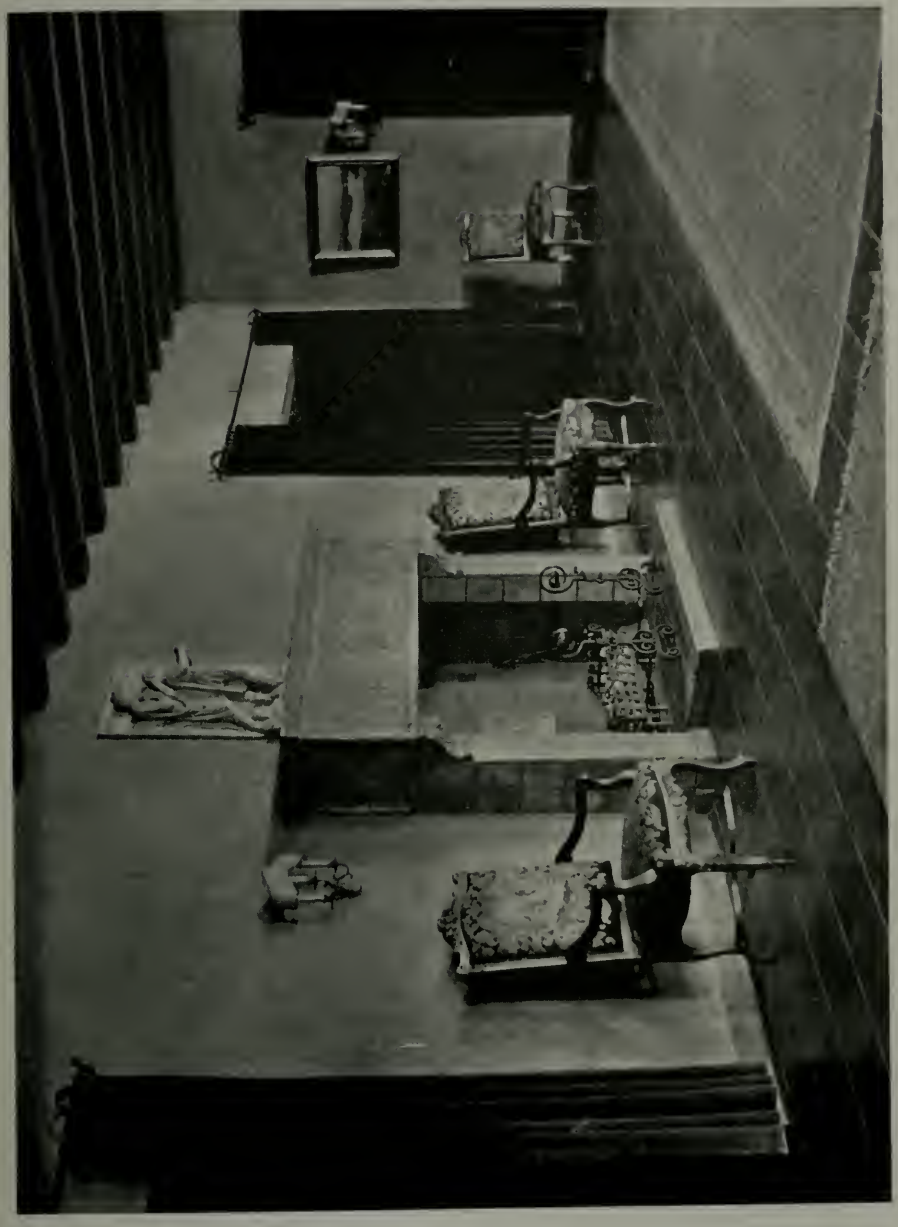
FOYER TO AUDITORIUM, FRIDAY MORNING CLUB
ALLISON & ALLISON, ARCHITECTS

CORNER OF LECTURE ROOM, FRIDAY MORNING CLUB
ALLISON & ALLISON, ARCHITECTS

CORNER OF FOYER, FRIDAY MORNING CLUB
ALLISON & ALLISON, ARCHITECTS

MAIN AUDITORIUM, FRIDAY MORNING CLUB
ALLISON & ALLISON, ARCHITECTS

STAIRWAY, FRIDAY MORNING CLUB
ALLISON & ALLISON, ARCHITECTS



LOUNGE ROOM, FRIDAY MORNING CLUB
ALLISON & ALLISON, ARCHITECTS

FOYER TO MAIN DINING ROOM, FRIDAY MORNING CLUB
ALLISON & ALLISON,
ARCHITECTS

MAIN DINING ROOM, FRIDAY MORNING CLUB
ALLISON & ALLISON, ARCHITECTS

DETAIL ENTRANCE, HOUSE OF MR. GEO. W. BAKER, PIEDMONT
SIDNEY B. AND NOBLE NEWSOM. ARCHITECTS

The exterior and interior colored texture which contributes to the beauty of this Spanish house accomplished by the use of California stucco.

Acoustic Design of Architectural Interiors

By VERN O. KNUDSEN, Ph. D.*

THE acoustic outcome of an architectural interior is usually a source of grave worry and uncertainty to an architect. He awaits with hope and faith, yet mingled with fear and doubt, the verdict that his first audience will render regarding the acoustic properties of his latest creation.

The writer hopes in the present paper to dispel some of this doubt and uncertainty by setting forth the fundamental principles of architectural acoustics in a simple and practical manner. These principles have been worked out with scientific precision, and, if correctly applied, will assure good acoustic quality in any architectural enclosure. The success attending the application of these principles to architectural enclosures during recent years has fully demonstrated that we can be both optimistic and certain regarding the outcome of this important problem.

It is about twenty years since the more fundamental principles of architectural acoustics were worked out and published by the late Professor Wallace C. Sabine, of Harvard University. Generally, architects, builders and the public have been very slow to appreciate and apply these principles. However, there have been many architects and builders who have applied these principles with satisfactory success during the past few years. In Los Angeles, for example, the Board of Education is now having the acoustic designs of its new school auditoriums worked out in advance of construction. The writer is familiar with scores of other instances in and surrounding Los Angeles, where, during the past two years, the principles of architectural acoustics have been applied successfully to churches, theaters, school auditoriums, music halls, offices and other interiors.

There is nothing mysterious or extraordinary about the acoustics of interiors, though many wierd and naive theories and principles have been proposed by unknowing persons. For instance, not long ago a rather prominent commercial and technical man attempted to explain to the writer how the acoustics of an interior was determined by three things: humidity, temperature, and differences of temperature! An architect recently said he always attained good acoustic quality if he maintained a particular ratio of length, width, and height. Another said his auditoriums were always good if he used wood floors. And so on.

The acoustics of any enclosure depends upon the fundamental characteristics of sound, and upon its transmission, reflection, refraction, diffraction, absorption, and resonance. There are three fundamental characteristics of sound: pitch, loudness and quality. The pitch of a sound is determined by the frequency of the vibratory impulse which reaches the ear. The loudness of a sound is determined by the amplitude of the vibratory impulse which reaches the ear. The quality or timbre of a sound is determined by the wave form of the vibratory impulse which reaches the ear. These vibratory impulses consist of actual to and fro movements of the air molecules. These periodic movements of the air molecules produce pressure variations against the drum membrane which, transmitted to the inner ear, elicit sound sensations.

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*Editor's Note—Professor Knudsen is recognized as one of the leading authorities in acoustical problems on the Pacific Coast. His article, written especially for readers of The Architect and Engineer, will be found of practical interest to the architectural profession. Professor Knudsen is a member of the faculty of the University of California, Southern Branch.

The production and transmission of sound are understood generally by all, and therefore require no explanation here.

The reflection of sound is similar to, yet different from, the reflection of light. A ray of sound will be reflected from a reflecting surface such that the angle which the reflected sound ray makes with the surface is equal to the angle which the incident ray made with the same surface, provided, and only provided, that the reflecting surface is large compared with the wave length of the sound ray. The wave lengths of many sounds in speech and music are ten feet or more, and the surfaces from which these are reflected in auditoriums are not usually large enough to produce regular reflections. The reflection is accompanied with sound diffraction, that is, the bending of sound around obstacles. This must be borne in mind when one attempts to trace sound rays through the plans and sections of any enclosure.

Absorption of sound takes place at every reflecting surface. Practically, the sound which isn't reflected or diffracted is absorbed. The amount of sound absorbed by any obstructing material depends upon the porosity and yielding properties of that material. Thus a hard cement surface will absorb less than two per cent of the sound which impinges upon it, whereas a one-inch hairfelt surface will absorb as much as sixty per cent of the same sound.

Resonance occurs when the vibrations of sound are augmented and enhanced by the reflections from the bounding walls of an enclosure, as a closed or an open pipe, a vase or a small cavity in a room; or by the free vibrations of any vibrating structure, as window panes, stretched membranes or sounding boards. For example, if one sings up and down the musical scale in a small room with hard walls, as in a breakfast nook or a bathroom, one notices that a note of particular pitch will ring out louder than all other notes. For the particular note which produces the resonance the successive reflections from the walls unite with the vibrations of that note in such a manner that the vibrations are augmented and sustained.

The acoustics of interiors must satisfy requirements which are imposed by the physical characteristics of music and speech. It will be necessary, therefore, to describe briefly the more important physical characteristics of music and speech. Music is made up of a succession of simple or complex combinations of pure tones. These pure tones may vary in pitch from about 20 to 20,000 double vibrations per second. They may vary in loudness from the minimal threshold of audibility to painfully loud tones. Speech is made up of sound vibrations varying from 100 to 5,000 double vibrations per second. Both the frequency and intensity of the vibrations are subject to exceedingly rapid modulations.

Keeping in mind these properties of sound and the nature of music and speech, we can set forth, and will be able to understand, the fundamental principles of the acoustics of interiors.

The necessary and sufficient conditions for good hearing in any enclosure have been very clearly stated by the late W. C. Sabine, whose life was largely devoted to the acoustics of architectural interiors. These conditions are four in number; namely:

1. All extraneous noises should be effectively eliminated.

2. The successive sounds in articulated speech or music should be clear and distinct.

The time of reverberation is directly proportional to the volume of an enclosure and inversely proportional to the total absorbing power of the interior of the enclosure and its contents. This is Sabine's law and is expressed by the equation — $t=.164\ V/a$, t—time of reverberation, V—volume of the enclosure in cubic meters, a—total absorbing power expressed in square meters of open window, .164 is a constant.

For a certain auditorium in Los Angeles, Sabine's equation gives $t=11.0$ seconds when no audience is present and $t=3.7$ seconds when an audience of 1000 is present. The effect of this excessive reverberation upon the quality of speech is obvious. Even with an audience of 1000, the full seating capacity of the auditorium and therefore the condition under which the reverberation will have its minimal value, each syllable in articulated speech will persist audibly while the succeeding twelve to fifteen syllables follow. The result is a confusion of the successive components of speech, for each syllable is confused with the twelve to fifteen syllables which preceded it. When the reverberation in an auditorium is as excessive as it is in the case just cited, the quality of speech is impaired to the extent that the audience experiences difficulty and discomfort in hearing the average speaker. If the reverberation is much greater than 3.7 seconds, the successive speech sounds will be confused beyond recognition. The time of reverberation for the auditorium just referred to should have been 1.7 seconds with an audience of 1,000 persons.

The writer is at present conducting some experiments for the purpose of determining the quantitative influence of reverberation upon the quality of speech. These experiments will indicate what value of reverberation an auditorium of given size and dimensions should have to give the best acoustic quality for speaking purposes. Some curves for a single auditorium will be presented later in this paper.

3. The simultaneous components of speech or music should be accurately reproduced at the ears of the auditors.

4. The sound must be sufficiently loud in all parts of the auditorium.

Extraneous Noises. Interfering noises are of internal or external origin. The former include noises which arise from the shuffling of feet on the floor, moving in seats, whispering, coughing, noises which originate in ventilating motors, etc. The limited means of correcting these noises are obvious, such as the carpeting of floors, the upholstering of noiseless chairs, encasing the ventilating motors and mounting them on cork or felt supports. The noises of external origin are generally more troublesome, especially in metropolitan centers where street traffic is heavy. To avoid these sources of disturbance the auditorium site should be located in a reasonably quiet place; the entrance to the auditorium should not be adjacent to a much used corridor; the walls should be constructed of heavy, non-yielding, non-conducting materials, and, in extreme cases, the walls should be multi-layered with the layers well insulated from each other. In some instances it may be necessary to use heavy laminated doors and multi-layered windows. The writer is at present working on an auditorium in which the inadequacy of the sound insulation of the walls and entrance doors is a serious menace to the acoustic quality of the auditorium.

Excessive Reverberation. The second named condition for good hearing is that the successive components of articulated speech or music be clear and distinct, entirely free from each other. This condition can not be fully attained, since the walls of an auditorium are usually effi-

cient sound reflectors and consequently when a sound is once produced it is successively reflected from the walls and other obstacles until its intensity is reduced below the threshold of audibility. This persistence of a sound after the source has stopped is called reverberation. The time that a loud tone, i. e., a tone whose initial intensity is one million times minimal audible intensity, persists after the source has stopped is the standard measure of the time of reverberation.

Professor F. R. Watson of the University of Illinois has compiled some valuable data which give the time of reverberation that an auditorium of given size should have to assure the most satisfactory acoustic quality for either speech or music. These data were obtained by calculating the times of reverberation in auditoriums which are approved by critics and the public. In the experiments which the writer is conducting, the time of reverberation an auditorium should have for speaking purposes will be determined quantitatively by carrying out articulation tests.

In halls which are designed for speaking purposes the reverberation should be reduced as much as loudness will permit. It should be borne in mind that loudness is proportional to reverberation and hence in large auditoriums we tolerate some reverberation in order that the speech sounds will be reinforced by the reflections of sound from the interior surfaces of the enclosure.

Many present day acoustic blunders are attributable to the neglect of this single property of reverberation. These blunders could have been predicted in advance of construction and steps could have been taken to avoid or correct them while the plans were yet fluid. In all such instances a preventative program is far more practical than a corrective one. It would have required not more than two or three hours to calculate the time of reverberation for the auditorium referred to in the paragraph preceding this one. That calculation, showing that the time of reverberation would be 3.7 seconds, should have been conclusive evidence that the auditorium would not be satisfactory for good hearing. Steps should have been taken to reduce the time of reverberation to not more than 1.7 seconds. This could have been done by decreasing the volume of the auditorium or by increasing the absorbing power of the walls and interior decorations.

Closely associated with reverberation in halls and chambers is the phenomenon of echoes. Echoes are produced by the successive arrival at the ears of direct and reflected sound waves. The time interval between the two successive sound waves must exceed 1/17 of a second in order to produce a distinct echo. This means that the difference of path of the direct and reflected sound must exceed about 70 feet, which is approximately the distance that sound travels in 1/17 of a second. If the time interval is less than 1/17 of a second a distinct echo is not heard, but the quality of the direct sound impulse may be badly marred if the time interval approaches 1/17 of a second.

The elimination of echoes from an auditorium design is not always a simple matter. The architect should avoid structures that involve unnecessarily large differences of paths of direct and reflected sound waves. Domes, or other curved surfaces, may be particularly troublesome, if their acoustic effects have not been carefully predetermined. On the other hand, curved surfaces properly placed and with the proper radii of curvatures, may actually contribute to good acoustic quality. The difficulty of predicting echoes is further increased by the nature of sound reflections, which, we have noted, do not usually follow the ordinary laws of light reflections.

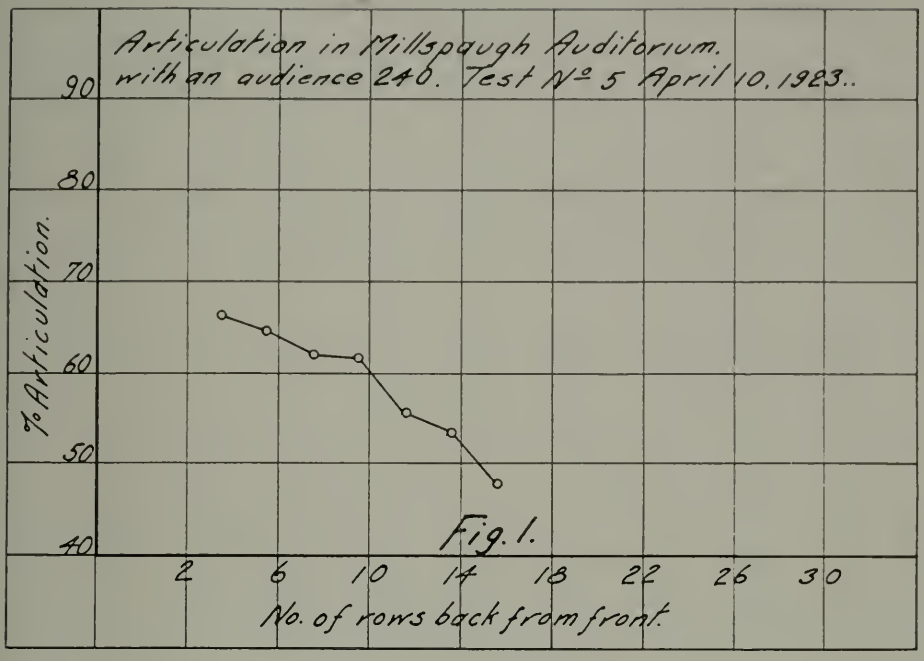
Articulation in Millspaugh Auditorium.
with an audience 240. Test No 5 April 10, 1923..
% Articulation.
90
80
70
60
50
40
2
6
10
14
18
22
26
30
No. of rows back from front.

Fig. 1.

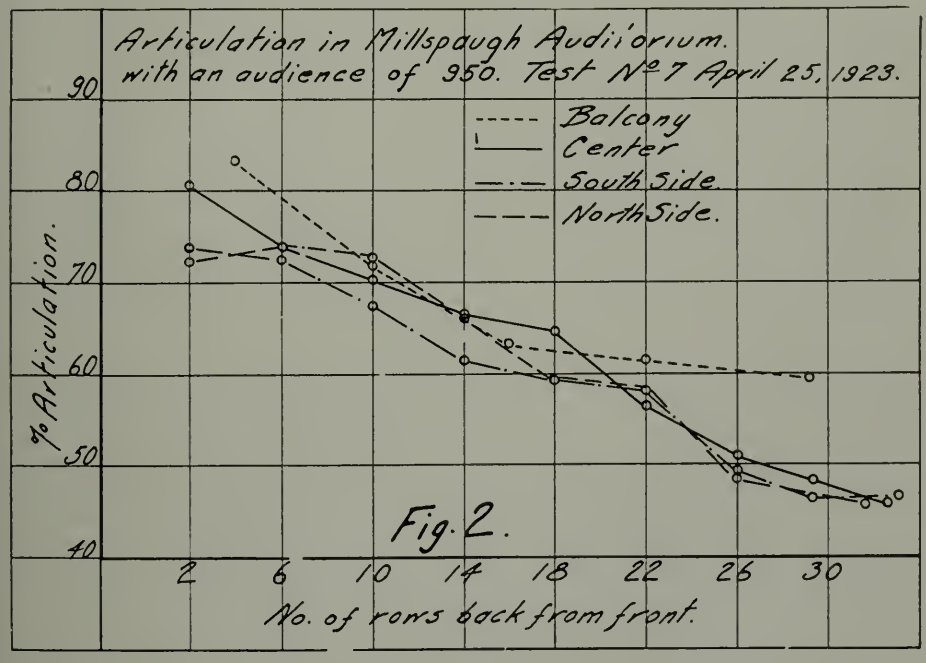
Articulation in Millspaugh Audi'orium.
with an audience of 950. Test No 7 April 25, 1923.
Balcony
Center
South Side.
North Side.
% Articulation.
90
80
70
60
50
40
2
6
10
14
18
22
26
30
No. of rows back from front.

Fig. 2.

Fig. 3.

The most satisfactory means of predetermining echoes in an auditorium is to construct a small model of the auditorium and obtain instantaneous photographs of sound waves advancing through the model. A study of these photographs will reveal the sources of the echoes and therefore suggest their remedy. This should be done during the early stages of the design, while the plans are yet plastic.

Part II

Distortion. The third named condition for good hearing is that the simultaneous components of speech and music should be accurately reproduced at the ears of the auditors, i. e., there should be no distortion. This condition of no distortion can be only partially attained. There are two principal factors which contribute to the distortion of sound waves in an auditorium; namely, the uniting of direct and reflected sound waves and the varying degree with which sound waves of different pitch are absorbed by the walls and the audience.

When a direct and a reflected sound wave meet in phase, i. e., when condensation meets with condensation and rarefaction meets with rarefaction, the two waves conspire and produce an augmentation of loudness; but when the two waves meet in contrary phase, i. e., when condensation meets with rarefaction and rarefaction meets with condensation the two waves oppose each other and produce silence. When the two waves meet in any other phase of vibration they may produce either an augmentation or a diminution of loudness, depending upon the difference of phase with which they unite. Such uniting of direct and reflected sound waves is always occurring when a sound of any kind is produced in an enclosure.

This may be illustrated by referring to some recent intensity measurements taken in the college auditorium at the University of California, Southern Branch. With a steady tone of 1024 double vibra-

tions per second produced at the speaker's position, the intensity of the tone as observed in the middle of the auditorium changed as much as fifty fold for a space variation of only one foot. If an observer anywhere in the auditorium moved his head back and forth he could notice a very pronounced variation in the loudness of the tone. This variation of loudness was produced by the differences of phase with which the sound coming directly from the source met with the sound which was reflected from the walls or other obstacles in the auditorium.

It is obvious therefore, that the speech or music which reaches the ears of an audience in any hall or chamber will have some of its component frequencies augmented and others diminished, depending upon the manner in which these direct and reflected components unite. The result is a distortion of the speech or music which is heard by the audience.

The only means of avoiding this distortion is to employ building materials which will absorb the greater part of the sound incident upon them. In most cases this is not necessary, since the distortion arising from this source is not as troublesome as one might expect. It needs attention only when unusually good acoustic quality is required, such as in the better music rooms, in radio broadcasting rooms, and in small theaters where dramatic expression is to be reproduced accurately.

A second source of distortion is the selective absorption of sound by the interior surfaces and especially the audience. These, in general, absorb the high frequency components of sound much more completely than they do the low frequency components. This is especially true of an audience, which absorbs tones of low pitch only relatively slightly and tones of high pitch almost completely. Obviously then, speech and music, which are made up of complex combinations of low and high pitch components, will suffer distortion by reason of the greater absorption of their high frequency components. The ill effects of this distortion can be reduced to a minimum by using wall materials which absorb equally well, as nearly as possible and practical, tones of all frequencies employed in speech and music.

Loudness. The fourth named requirement for good hearing is that the sound be sufficiently loud in all parts of the auditorium. To meet this requirement the volume of the room must not exceed a certain limiting size, or else artificial aids must be employed for the purpose of amplifying the sound energy. Public address systems, recently developed by telephone engineers, are proving to be very satisfactory for addressing large audiences. With a properly designed amplifying system it is possible to address an audience of almost unlimited size.

The shape of the auditorium and the relative positions of the speaker and the audience should be chosen such as will give, as nearly as possible, a uniform distribution of sound energy over all parts of the audience. The speaker's position should be elevated, the rear seats should be elevated or appropriate balconies should be introduced, and the reflecting walls near the speaker's position should have positions and curvatures that will favor a concentration of sound energy in the more remote parts of the audience. Finally, low balconies should be avoided since they prevent an adequate flow of sound energy under the balconies.

If the first three requirements for good hearing are adequately provided, that is, if extraneous noises, excessive reverberation, and distortion have been suitably reduced, the matter of loudness will probably be satisfactory for auditoriums which seat about 3000 or less. Speech or music need not be very loud to be entirely satisfactory for good hearing provided it be free from extraneous noise, excessive reverberation and

serious distortion. But in auditoriums it is practically impossible to have speech or music free from these interfering influences and consequently it is an advantage to design auditoriums such that the audience will receive the maximum amount of sound energy. The speech sounds should have an energy content of about 10,000 times that of any disturbing noises if the latter are not to impair the quality of the speech.

Figure 3 shows the results of some sound intensity measurements conducted in the Millspaugh Auditorium of the University of California, Southern Branch. The energy is plotted in arbitrary units in terms of the number of rows back from the front of the auditorium. The energy near the source is taken as unity. It is seen from the curve that at 5 rows back the intensity is about 0.5 and at thirty rows back it is about 0.23. The falling off of intensity toward the rear of the auditorium is not as great as one might at first expect. The reason for this is that the reflections from the walls and ceiling in the auditorium tend to equalize the distribution of sound energy throughout the entire auditorium.

The hearing qualities at different positions in the auditorium are shown by Figures 1 and 2. The percentage articulation is plotted against the number of rows back from the front of the auditorium. The percentage articulation was obtained by a speaker calling out meaningless monosyllables, and auditors throughout the auditorium recording what they heard, or thought they heard. Figure 1 is for an audience of 240. With an audience this small the auditorium is excessively reverberant!

1. With an audience of 240 the time of reverberation is 3.9 sec.
2. With an audience of 950 the time of reverberation is 2.1 sec.

The percentage articulation is therefore quite low. For example, on the third row the articulation is only 67%, and fifteen rows back the articulation is only 50%—an amount which is not sufficient for good acoustic quality.

Figure 2 shows the results with an audience of 950. The results contained in these curves were obtained from the records of 280 auditors, all of whom had been given training in recording the speech sounds employed in the tests. As these curves indicate, the articulation near the front central portion of the main floor and in the front of the balcony is about 80%, and the articulation drops off to about 65% at fifteen rows back, and to 47% at thirty rows back. With the audience of 950 the auditorium is not so reverberant as with the smaller audience, and, as the curves indicate, the hearing qualities are much better than they are with an audience of 240. These two curves indicate, therefore, in a quantitative manner, the importance of reducing the time of reverberation to an appropriate value.

The four conditions set forth in this article are the required conditions for good acoustic quality in any enclosure. They merit careful attention in the design of any architectural interior, and given careful attention, will assure good acoustic properties in the interiors which architects design.

If the interior is a rather small, simple enclosure; that is, a room bounded by the ceiling, the floor and four walls, the problem of providing good acoustics in such a room consists of first eliminating extraneous noises, and second, maintaining such a relation between the volume and the absorbing power of the room that will give an appropriate time of reverberation. The appropriate values for the times of reverberation for different sized rooms are given with sufficient accuracy in Watson's book on "The Acoustics of Buildings".

If the enclosure is a double one, as a theatre; consisting of the auditorium and the stage recess; or even a more complex enclosure, as a church; consisting of nave, transept, and chancel, the problem consists of considering a number of simple enclosures coupled together by openings.

In dealing with large enclosures one must give consideration to the paths of the sound rays through the plans and sections of the interior. Differences of paths of sound rays to the same point in an auditorium, exceeding 70 feet, should be avoided. This can be accomplished by breaking properly the wall and ceiling surfaces and by choosing properly the dimensions of the room and the positions of the walls and ceiling. Curved surfaces are the most likely to produce echoes and hence they must be given special attention. If properly designed, however, curved surfaces may be of positive acoustic value. In large auditoriums surfaces of appropriate curvature and properly placed may add materially in directing a uniform flow of sound energy to the auditors in all parts of the auditorium.

Attention should always be given to the acoustic designs of music rooms, offices, school rooms and hospitals. All offices should have sufficient sound absorbing material in them to deaden noises which arise from conversation or transit of persons, or from typewriters, adding machines, or other office equipment.

The maintenance of quiet in a hospital deserves special attention. Signs are placed all around the outside of the hospital requesting quiet. Certainly adequate measures should be taken in the design of the hospital to deaden as much as possible those noises which of necessity arise inside of the hospital.

Even the rooms in a residence should receive acoustic attention. Music rooms and living rooms especially require and deserve such attention. The writer is familiar with many living rooms in high class residences where it is exceedingly tiresome to converse at great length because the room is excessively reverberant. Likewise many music rooms in good residences are illy suited for their purpose because they are either too reverberant or too "dead".

In conclusion, the writer wishes to emphasize what Sabine so frequently emphasized; namely, that a considerable acoustic effect can be accomplished only by a considerable change in the size or the form or the materials used in the construction. Very recently someone proposed to the writer the stretching of wires across the ceiling of a large and beautiful church auditorium for the purpose of breaking up the sound waves and reducing the reverberation. In a church not very far from Los Angeles two miles of wire are lavishly stretched across the ceiling. Scores of other instances can be cited and in no instance does the wire break up the sound waves or reduce the reverberation. Sound waves pass through these wires as readily as does water through a coarse sieve. Equally futile are many other corrective measures which have been proposed and employed, such as the rough troweling of walls, and placing of resonating chambers in the interior of the auditorium, etc.

On the other hand hundreds of instances can be cited in which the principles of architectural acoustics have led to complete success, both in the correction of interiors which were acoustically defective and in the design of interiors that have satisfied the highest acoustic expectations.

Good Workmanship Essential to Good Stucco

THE selection of a stucco contractor who knows his business and can show that he has done good work is the most important factor in securing good stucco construction, the Bureau of Standards of the Department of Commerce finds. At least in the present state of the art more depends upon capable workmanship than upon many of the details of the specifications. The successful stucco specialist may be expected to know the requirements of the specifications, and will also have acquired a knowledge of the application of the material which can be learned only by experience.

Tests on stucco construction have been in progress at the Bureau since 1911. Panels of stucco made in accordance with different specifications have been constructed and exposed to the weather for a number of years. Some of these panels were of back plastered construction; some were made with wooden sheathing. Paper backed construction, plaster board, and other types were also tested. Still others were applied to walls of masonry.

Measurements of the shrinkage of stuccos were also made by means of a special comparator. It was shown that this shrinkage may be controlled to a large extent by regulation of the amount of water used. The general rule is that the material should stiffen from removal of water before chemical set occurs, and the ability to recognize this condition is considered a necessary part of the plasterer's practical knowledge of his craft.

Masonry walls were found to make the best bases for stucco, and on them the finest stucco textures can safely be used. Fine textures are not recommended for use on frame construction, as they show cracks which are not visible in coarser textures. Where stucco is used on wooden frame the latter should be well braced, and the use of metal or wire fabric or metal lath for reinforcement is recommended. The tests showed that better results were obtained by omitting the sheathing, using special insulation and bracing where required. If sheathing is used it is thought horizontal sheathing would be preferable to the diagonal sheathing which was used in most of the sheathed test panels.

* * * *

A Profitable Investment

An extension agent in Virginia called on a specialist in rural engineering for advice in the case of a woman who wished to install running water in her home. A report received by the United States Department of Agriculture states that after a survey of the premises it was found that the housewife was walking 140 miles per year and expending enough energy in lifting water to do the work of two horses in plowing 11 acres of land. A small hydraulic ram, overhead storage, kitchen sink, and waste pipe were purchased for $49, which put running water into the kitchen.

* * * *

Automatic Sprinklers Keep Down Fire Losses

Of the $1,320,000 loss in the country, $1,086,000 came in 42 fires where the loss was $3,000 or greater. The value involved in these 42 fires was nearly $13,000,000. As a contrast to these figures, a recent report of the National Underwriters shows 37 fires in sprinklered risks for which claims were filed in 20 cases only. The values in 17 of the sprinklered plants where fires occurred was $7,000,000 while the losses in the fires were only $50,000.

FRAGMENTS OF CARVED LIMESTONE FROM EL AMARNA, EGYPT
Left to right—1—Hard white crystalline limestone from Capital.
2—White limestone with fine hieroglyphics.
3—Fine white limestone elaborately carved.
4—Fine white chalky limestone carved with the rays of the hand of Aten.
5—Hard white crystalline limestone from cornice.

Rare Collection of Limestone Relics From Egyptian City

EGYPTIAN stone relics from the ancient city of Tel-El-Amarna, forwarded several months ago by the Egypt Exploration Society, have arrived at headquarters of the Indiana Limestone Quarrymen's Association in Bedford. They will form a part of what eventually may be the most complete collection of stone types in the world.

King Tut-Ankh-Amen's father-in-law, Amenhotep IV, thirty-three centuries ago founded the city whose ruins are now known as Tel-El-Amarna, on the Nile in Upper Egypt, and from which the collection was excavated. It was Amenhotep's empire of sun worshipers. After Amenhotep's death Tut-Ankh-Amen weakened in his opposition to the

RUDELY CUT OFFERING TABLE OF COARSE FOSSILIFEROUS LIMESTONE FROM EL AMARNA, EGYPT

FRAGMENT OF CARVED WHITE LIMESTONE FROM EL AMARNA, EGYPT
Hieroglyphic to left meaning "Eternally"

SPECIMEN OF WHITE LIMESTONE CARVED WITH THE RAYS OF ATEN, THE SUN DISK FROM EL AMARNA, EGYPT

FRAGMENT OF BUILDING FROM EL AMARNA, EGYPT
Buff limestone carved with a row of Uracus snakes bearing the Sun Disk on their heads

strongly established cult of the old polytheistic priesthood and abandoned the new sun-worshipping religion, the court returning to Thebes, and Amenhotep's Utopia being abandoned after an existence of from twenty to fifty years.

Quaint bits of limestone furniture, low-slung chairs, stools, stands, an offering table, and curious utensils for grinding meal are included in the collection dug from the most imposing homes of the ancient ruins. There are also bits of sculpture bearing hieroglyphics sharply carved and easily translated. Other specimens formed a part of decorative groups of the capital, including door lintels and tablets, lines of the sculptor's chisel being almost unscarred by time. Many of the carvings bear the figures symbolizing the rays of Aton the Sun Disk. Each ray ends in the mysterious looking hand which is supposed to lay hold of and support the king and queen.

"Specimens of all varieties of stone which I have found in the city's buildings are included," wrote Thomas Whittemore from Deir Moras, Upper Egypt. "The more precious are in small pieces."

The collection comes to the Limestone Association through its membership and support of the Egypt Exploration Society.

STOOL OR SEAT OF FINE WHITE LIMESTONE FROM EL AMARNA, EGYPT

SLAB OR TABLE FROM EL AMARNA, EGYPT
This article evidently used for preparation of food possesses high polish in center as if from long usage

Power of Architect to Bind His Principal by Contracts for Labor or Materials*

By LESLIE CHILDS

THE question of the power of an architect to bind his principal by contracts for material or labor is one of interest and importance to architects and builders in general. The point has been the subject of considerable litigation, but, as each case of this kind has necessarily been decided in the light of the particular facts involved, the subject cannot be covered by the statement of a hard and fast rule.

However, as a general rule, an architect has no implied authority to enter into contracts for labor or materials and thus bind his principal, unless his contract of employment expressly gives him such authority. If then an architect enters into a contract of this kind it will not be binding upon his principal, neither may it be enforced by his principal, unless the latter knowingly accepts benefits therefrom or ratifies the contract so made.

The application of this rule of the law of agency is illustrated in an interesting and instructive manner in the recent California case of Steinfeld & Company, vs. Broxholme, et al, 211 Pac. 473, and because of the facts and holding it becomes a case of value on the question under discussion. The circumstances which culminated in the action while somewhat long and involved were, as taken from the report, substantially as follows:

A CASE IN POINT

Albert Steinfeld and Andrew Pizzini owned certain business property in Tucson, Arizona, which they desired to have remodeled. With this in mind they employed Mr. William Bray, an architect of Tucson, "to prepare certain designs and sketches." Pursuant to this employment Bray prepared the plans and designs and undertook to obtain bids upon the work.

The defendants, whose place of business was in Los Angeles, submitted a number of bids on the tile work, their last bid being for $1,080, all of which Bray placed before his employers, but these bids were rejected as being too high. Bray was then instructed "to get other bids," and some time thereafter he requested Mr. J. S. Watkins, a business man of Tucson who was going to Los Angeles, to call upon the defendants and ask them if they would do the tile work on the building for the sum of $1,000.

Watkins placed this proposition before the defendants and they agreed to accept it under certain conditions. The defendants thereupon wrote a letter, embodying the terms of their offer, which they delivered to Watkins who in turn gave it to Bray. The material part of this letter was as follows:

"Dear Sir: Confirming our conversation of recent date, we herewith agree to furnish and install the tile work in the building for the flower store as designed by Mr. Wm. Bray at your city for the sum of $1,000.00 (one thousand dollars). All to be done as per his plans using white tile on the stairways, but it is understood that on account of the present conditions for getting colored tile that we are allowed to use tile out of our present stock, matching the colors desired by Mr. Bray as near as possible. Yours very truly, L. A. Mantel & Tile Co. By J. W. Broxholme."

Upon receipt of this letter Mr. Bray wrote as follows:

*Prepared for this magazine by the author.

"Dear Sir: Mr. Watkins has informed me that you are willing to go ahead with the tile work for job 210, 44-46 North Stone avenue, for the consideration of $1,000.00. Please find enclosed blue prints for work, and kindly mail upon receipt contract and detail for rough measurements for stairs, etc., giving us the necessary depth to keep back for face of finished work. This work is well along and I trust you will use every endeavor to expedite your portion of it. Yours respectfully, William Bray."

DEFENDANTS WITHDRAW OFFER

About one week after the above letter had been mailed, the defendants wrote Bray that owing to labor conditions they would be unable to undertake the work involved. The defendants from that time on refused to recognize themselves as being bound by the contract, and the plaintiff (who was the assignee of Steinfeld and Pizzini) thereafter instituted the instant action against the defendants for damages for alleged breach of contract.

At this point it may be stated that there was no evidence to show that Bray's employers had ever accepted the offer submitted by the defendants. In fact from the record it appears, that Bray without express authority from his employers, wrote the letter accepting the offer submitted by the defendants. And that, up to the time of the defendants' letter withdrawing their offer, there was nothing in the record to indicate knowledge or ratification of the alleged contract on the part of Bray's employers.

Upon this state of facts the defendants defended on the ground that while they made an offer to install the tile they revoked the offer before it had been accepted. The contention being that there was therefore no contract for them to breach. This then brought the question of Bray's authority to accept the offer directly into issue. Upon the trial of the cause in the lower court a judgment was rendered in favor of the defendants. From this an appeal was taken to the higher court here in reviewing the evidence, relative to Bray's authority, it was, in part, said:

"The only evidence to which our attention has been called respecting the nature and scope of Bray's employment is the following: Harold Steinfeld, one of plaintiff's assignors, testifying as a witness for plaintiff, was asked in what capacity and for what purpose Bray was employed, and in reply said: 'To represent me in making certain improvements in the referred to property' * * *. Bray, when on the witness stand, upon being asked what he was employed by Steinfeld and Pizzini to do, replied: 'To get up some designs for remodeling the premises known as Howe's Flower Store, on Stone avenue, in Tucson.' It will be recalled that Bray did not take it upon himself to accept either of the two earlier bids submitted by defendants, but that he laid each before his principals for their acceptance or rejection. And when he presented defendants' bid of $1,080 to his employers the latter did not tell him to enter into a contract at a lower and more satisfactory sum; they merely told him 'to get other bids'." * * *

Following the above review of the evidence, relative to the authority of Bray, the architect, to enter into a contract for his employers, the court in construing it said:

WHAT THE COURT DECIDED

"At most it shows no more than that Bray was employed to render services as an architect in the remodeling of the store. As such architect he had no authority to enter into any contract for any part of the work. He might receive bids and submit them to his employers for

their acceptance or rejection, but he had no authority to bind them by accepting a bid from any source.* * *

"Bray, being without power to enter into a contract for and on behalf of his principals, was without authority to accept the offer contained in defendants' letter * * * or to deputize Watkins to do so. And, since defendants revoked their offer before any attempt to accept it was made by Bray's principals, it follows that there never was a consummated contract, and hence that defendants are not guilty of any breach of contract. * * *"

The foregoing California case is one of value upon the point decided. It illustrates in a striking manner the usual limitations on an architect's power unless such power is supplemented by further authority from his employer. It follows, in the light of this holding, that unless a contract made by an architect, in the name of his principal, is clearly within his authority, it will not be binding upon such principal neither will the latter be able to enforce it unless ratified by him, before the other party thereto has withdrawn.

Street Planning and Research

By CAROL ARONOVICI, City Planning Consultant

Traffic Congestion Demands New Method of Street Development

WE are desperately and wastefully trying to superimpose an automobile and aeroplane civilization upon a network of streets and highways modeled upon a pattern that has not varied materially in character and requirements since the first chariots of Ancient Rome.

A new point of view, a new technique, a new economic, social and political policy is needed. Its newness will be of little avail, however, without a careful re-evaluation of the facts and forces involved in the shaping of this new method of street development. The new philosophy, or science, or art, or all of them combined, can only be the result of the most intensive, impartial, scientific research which is worthy of the interest not alone of the local engineer or city planner, but of the State and Federal governments.

A general outline of such field of research may be stated as follows:

A. Width and length.
B. Orientation, direction or objective.
C. Frequency.
D. Geometrical relationships.
E. Differentiation of uses.
F. Contour or perpendicularity.
G. Social functions.
H. Aesthetic character.

A—Width and Length

The width of a street can not be discussed without first determining what is meant by width. A narrow avenue of travel may present a vast space for the circulation of air and the most favorable angle for the rays of the su nso that they may penetrate the largest street area and wall area over for the longest time of the day. We must, therefore, distinguish between width and avenues of travels and distances between buildings: Two functions so distinct from each other that they require sep-

arate treatment and consideration of factors only distantly related to each other. The usual narrow street of ancient cities which now constitute many of the blighted districts in which **lives are wasted and the sunshine is spared,** are illustrations of a confusion between avenues of traffic and all other functions of the street.

In determining upon the widths of streets from the point of view of traffic, we so often fail to learn the simple lessons of nature. A river bed widens towards its delta, but city streets are cursed with a deadly uniformity that takes no account of either the source of traffic, its tributary avenues or its objective. There are examples in every part of the United States of main streets which become narrower as they reach into the heart of the city and widen toward the source of the traffic they serve. The longer the street in a given density of population, the wider should be its terminous, unless provision is made towards the end of the objective for a redistributation of this traffic before it reaches the center of the highest congestion. The methods of research required in determining street widths with some degree of mathematical accuracy, is still to be developed. The errors that are being perpetrated upon public convenience and social economy, are obvious. There is ample scientific methodology available for the development of research forms that would be useful in evolving the necessary methods.

The length of the street, which would seem the first factor would constitute a premise to such investigations which in most instances is determined by the distribution of population on the one hand and eagerness or necessity to correlate this distribution with the main center of population and its social and economic activities. The further the tentacles of travel reach out towards the perifery of certain centers of population, the more complex the problem of street width calculations become.

Aside from the arteries of travel, the street as an avenue of sunshine and air distribution can easily be determined by a study of the orientation of the street, the heights of buildings, which may impede the free light and air circulation or reduce the hours of sunshine per day. The prevailing currents of air and the winds are usually well known and control, at least along general lines of temperature, is quite possible. Ventilation and air movement can be secured by scientific planning. The standardization of the method of such control belongs to the field of research.

B—Orientation, Direction and Objective

The traditional North and South, East and West streets, have prevailed from the beginning of city building. The assumption that because this method of orientation is obviously in harmony with the compass, it must be right, is wholly unwarranted.

The sun's rays vary their angle with the Seasons, the winds and the rains and the snow drifts all present problems of orientation and direction, the solutions of which must determine the orientation of the streets. A minimum amount of inconvenience and a maximum amount of control of the elements and their effects upon the streets and the homes that flank them, is the objective of orientation. Simple astronomical calculations, coupled with a study of the prevailing climatic conditions, will furnish the answer to all questions of street orientation, as it is affected by solar and climatic conditions. We have all the scientific data required, but its correlation is still awaiting our interest and attention.

The direction of streets varies, or should vary, with the objects to be attained. The usual method of endeavoring to converge all import-

ant streets into the center of the most congested area of the city, is erroneous and dangerous. Tangencional streets that would touch only the fringe of the congested district and connect with the main traveled arteries leading to the center, help in the solution of the problem of centripetal traffic which must otherwise pass the center in order to reach a point removed from the same center but in the opposite direction.

The relation between streets from the point of view of intersections, distances from each street, angles and curves, must depend upon the purpose to be achieved and the variety of streets used. The gridiron system, or what might be called the straight jacket of the common American city plan, is the least satisfactory from the city planning point of view, but the simplest and if not the cheapest from the point of view of real estate sub-divisions. It is neither the simplest nor the cheapest from the point of view of community economy or efficiency.

The gridiron combined with a diagonal, tangencional and circular systems developed according to requirements and in harmony with the size, character and economic and social development of the community will demand recognition in the city of the future. This means the economic solution of the question of irregular blocks ranging through many geometrical forms and sizes. Rudolph Muller created the hexogonial block of Vienna. L'Enfant developed the triangular and trapezoid blocks in Washington, and Houseman and his followers in Paris did not heed the effects of his stupendous plan upon the forms of blocks and their utility or reality value. Paris is the best example of freedom from stereotype block forms.

Objectives in street development may be considered either from the point of view of terminal utility and convenience of from the point of view of architectural foreground.

The diagonal is the last street form for objective traffic control and segregation. The gridiron system represents the most difficulty in construction and development in relation to its objective. The lack of differentiation in the street forms in the gridiron system leaves the creation of centers to hazard and in most instances the access to certain points requires travel along two sides of a triangle instead of the hypotenuse. The architectural objective presents many aesthetic problems which have been so carefully and fully treated by Camillo Sitte, the Austrian whose work along this line is monumental, despite its exaggerations and striving after uniformity of interpretations.

The whole subject of orientation, direction and perspective, needs re-examination in the light of the newer methods of transportation, the segregation of urban functions due to zoning, the division of functions and activities between various cities and the expansion of metropolitan districts through the satellite city, the suburb, the decentralized real estate sub-division, the village community and the outlook toward expansion into outlying and undeveloped territory.

Each community must carry on its own investigations and research, but throughout the fundamental requirements are the same and the methods of research should be subject to careful standardization.

The next article will deal with the other six phases of Street Development Research.

* * * *

New Painting Machine

Capable of painting six to seven miles of white stripes on concrete highways a day, a pneumatic spray-painting machine has been devised.

THE
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Published Monthly in the Interest of the Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast by The Architect and Engineer, Inc.

PUBLICATION OFFICE:
627-629 Foxcroft Building, San Francisco
Telephone Douglas 1828

The publishers disclaim any responsibility for statements made in the advertisements of this magazine.

Terms of Subscription
(Including postage) to all parts of the United States, $2.50 per annum; to Canada 75c additional; to all Foreign points $1 additional

Vol. 79 OCTOBER, '24 No. 1

THE trained architect with his efficient office organization and equipment is the individual to whom an owner should go when he contemplates investing his money in a building enterprise.

CARL F. GOULD, A. I. A.
Seattle, Wash.

WHY UNETHICAL?

It is now recognized not only to be unethical but dishonest for an architect to accept any commission or favor or rebate on materials specified by him or on goods or materials purchased by him for or on account of his client. But suppose that all such funds so secured were credited to the client's account or if the checks received by the architect in payment for such commissions or rebates were endorsed to the client, who is harmed? Should material dealers and others quote lower prices to architects than to individual owners? Should not an architect be considered as a wholesale dealer? If an architect specifies certain goods and contracts are based on the specifications, the selling cost of those supplying the materials so specified has been reduced to the minimum. Therefore, should not the usual selling cost be credited on the sale?

These questions have all been asked and answered before, says a writer in the Illinois Society of Architects Bulletin. Human nature being as it is, professional bodies generally have taken the position that such practices are to be discouraged. If, however, the architect faithfully and honestly accounts to his client for every cent so received and if the client is advised in advance of about what he may expect, why is the practice unethical or dishonest?

IF an architect can't express his thoughts fluently, graphically, then he is like a blind fiddler who has to depend on a dog to get anywhere. Even then he may be only a poor copy-cat fiddler, without any worth while ideas of his own.

LOUIS CHRISTIAN MULLGARDT

MILLS—WOMEN'S WESTERN COLLEGE

Mills College is of vital interest to the public because of its unique educational position on the Pacific Coast; its beauty of campus, and its contribution to the literary, artistic and civic life of the East Bay cities.

With its foundations laid in 1852, three years after gold was discovered in California, for almost a score of years it offered training and culture for the daughters of the pioneers. Situated as it was in Benicia, the early capital of the State, it was easily accessible by means of steamers plying on the Sacramento river, and its students flocked in increasing numbers from the fertile ranches as well as from the mining towns.

On the present site of Mills College in Alameda county they built an imposing "main building", on the modern equipment of which the daily press of that generation

commented at length. In the 'sixties and 'seventies other private academies and seminaries were flourishing, as there were no public high schools.

However, Mills College today stands unique as the only representative of those early beginnings in the educational life of California. its perpetuation may be accounted for by the fact that the founders, realizing that secondary education was being taken over by the public school system, deeded their property to a board of trustees with the recommendation that an application be made to the State of California for a college charter. In 1885 the charter was granted, and during each succeeding year a class has been graduated.

The motto over the entrance gate is "Aut disce aut discede", which the students translate freely, "Either learn or leave".

For the natural and potential beauties of its campus of one hundred and fifty acres, Mills College could hardly be surpassed. Two streams from the foothills wind their way through meadow, garden and wooded area of eucalypti, pines, and oaks. More than fifty years ago the founders planted thousands of trees to line the pathways and cover the hills' slopes.

A lake of rare beauty at the upper end of the campus forms the setting for outdoor pageants and festivals. Audiences of several thousand guests may be seated on one bank of Lake Aliso and enjoy the pageantry on the opposite shore — a picturesque stage with its skyline of trees and wooded hills rising in the background and the emerald waters reflecting the gay costumes of the dancers and a panorama of gnarled oaks, stately eucalypti, blue sky and floating cloud.

Mills College has been called frequently the "garden college" because its residence and classroom halls, its studios and laboratories have been placed informally in gardens that bloom the year 'round.

A plan for a more formal assembling of different units is now being perfected. The first survey drawings for the "Greater Mills" were the gift of the late Phoebe Apperson Hearst, and the work of Architect Ralph Bernard Maybeck, designer of the Palace of Fine Arts at the Panama-Pacific Exposition. The plans are now being developed in detail under the direction of Walter Ratcliff, Jr., architect of Mills College, and these will be illustrated fully in an early number of The Architect and Engineer. All achitectural and landscape improvements are made to conform to these plans.

The physical education unit was completed last autumn through the generosity of Mrs. I. W. Hellman, Jr., who gave an open-air swimming pool in memory of her husband, former trustee of the College. The unit now includes gymnasium, tennis, handball and basketball courts, athletic field, swimming pool and recreation hall.

The chemical laboratories built about a court in conformity to a modified Spanish type of architecture are the gift of the late Mary Keyser of San Francisco. One of the science buildings was given by Nathaniel Gray. Warren Olney Hall is named for one of the trustees, and Lisser Hall for Louis Lisser, for more than a score of years dean of the music department.

Among the new buildings, for which there is an imperative need, two are especially urgent. The first of these is an adequate library to provide more reading room space and shelf space for the increasing number of volumes that today are overflowing the Margaret Carnegie library; and the second is a suitable chapel large enough to seat student, faculty, and, on days of celebration, guests as well. The largest auditorium today, Lisser Hall, is inadequate for this purpose.

NO law can be passed which will keep a gullible people from being fooled; but when public opinion once has made its own the beauty of architecture it may have by choosing experts instead of ignoramuses to do its work there will come a recompense, a tidal wave of full appreciation, and as deep a disgust for pseudo art and ugly city streets.

M. URMY SEARES,
in California Southland

BUILDING COSTS DOUBLE IN 10 YEARS

A report by the National Industrial Conference Board, after an exhaustive study of building conditions, points out that building costs in the United States have doubled in the last ten years and asserts that the shortage of building labor has been the outstanding factor in boosting construction costs. In short, it has been the failure of the supply of skilled labor to keep pace with the demand. Immigration restrictions are blamed for this failure in the report.

The conference board points out that stabilization of building at present high costs is forcing the average wage earner to pay for rent a greater proportion of his income than he is justified in doing, or else occupy premises beneath his proper station. A continuance of the present vigorous building program is predicted until a point is reached when the supply so far exceeds the demand as to bring about a reduction in rents and home-purchase prices.

Golden Era in Architecture

The golden era in architecture will come during the next 100 years in the United States, Architect C. W. Dickey told members of the Knights of the Round Table at the Hotel Oakland recently.

Europe is through with its architectural development, according to Mr. Dickey, who has returned from an extended tour abroad.

"Never before in the history of the country has there been such development in architecture as will occur in the next one hundred years," Dickey said. "Europe has done nothing along architectural lines for the last fifty years and now it is time for architects in this country to make their contributions known."

Mr. Dickey sketched his observations of life in the various countries and said that American home life is so far superior to that of Europe that a mechanic here lives better than a prince there.

There are no individual homes in Italy, Turkey or Greece, but instead the people are crowded together in large houses or tenements, he said.

He found the countries incredibly dirty and said that the people there have no idea of plumbing and what little they have is defective.

COMMUNICATIONS

Values The Architect and Engineer

Editor The Architect and Engineer.
Dear Sir:

Enclosed please find remittance for one year's subscription to The Architect and Engineer. Referring to your letter of Sept. 3rd, 1924, will say I have enjoyed the issues that have been received to this date. I was under the impression this magazine is published for the use of Architects and Engineers only and was surprised to know subscriptions are offered outside of these professions.

I will make room on the shelves of my book case for subsequent issues as I consider the space and time well consumed by any building contractor who subscribes to this magazine.

Very truly yours,
F. R. ZINCK, Gen. Cont.
102 West Maple St.
Stockton, Calif.

Magazine has Influence

Editor The Architect and Engineer.
Dear Sir:

I am having some enlargements made of my more recent houses with some few interiors and details, for your publication.

Mr. Cheney is very generous in his praise of my houses, and I want to take this occasion to again thank you for the wonderful publicity your magazine gave me two years ago. Its sphere of influence is evidently a wide one. Two clients looked me up from New York having seen a copy of your magazine in the New York Public Library, and the adobe work which I did at the Rancho Santa Fe and Torrey Pines Lodge was a direct result of the publicity which you so kindly extended me.

Yours truly,
JOHN BYERS.
Santa Monica, Cal., Sept. 18, 1924.

Will Some Subscriber Answer These Queries?

Editor The Architect and Engineer.
Dear Sir:

Sometime ago I saw a letter of inquiry and answer in regard to the proper way to obtain a certain result in connection with some operation in construction published in The Architect and Engineer.

If you can do the same for me I should like to have answers to the following questions and I prefer not to have my name appear:

1. One or more methods of specifying a puncheon board floor.

2. Detail and rules for proportioning fluethront etc. for a large fireplace with opening 5 feet by 5 feet or so.

3. Detail and specification for a cement finished roof over wood joists and masonry walls.

With kind personal regards, I remain

Very truly yours,
Anonymous.

With the Architects

Building Reports and Personal Mention of Interest to the Profession

New Del Monte Hotel

Architects Lewis P. Hobart and Clarence A. Tantau of San Francisco, have been commissioned by Mr. S. F. B. Morse, president of the Del Monte Properties Company, to design the new Hotel Del Monte on the site of the old building destroyed by the fire recently. It is to be a fireproof hotel of Spanish design.

Mr. Hobart is now in the East with Mr. Carl S. Stanley, manager, and Jean Juillard, assistant manager, of the Hotel Del Monte, visiting the modern resort hotels with a view to obtaining information that may be incorporated in the new Monterey structure.

Other features being considered include the building of a new clubhouse at the golf course, with all modern conveniences and of sufficient capacity to take care of informal dinners, dances, etc. It is also planned to add approximately twenty-five rooms to Del Monte Lodge. Other development schemes, such as the Monterey Peninsula Country Club on the 17-mile drive with a $100,000 clubhouse, and further improvements on the Pebble Beach golf course, will proceed without interruption.

Architect S. Heiman Busy

One of the busiest architects in San Francisco is S. Heiman, 57 Post street, who reports that he has been commissioned to prepare plans for a five-story reinforced concrete factory at Mission and Bond streets, San Francisco, for the Alcone Knitting Co., estimated to cost $175,000; also he is preparing plans for remodeling the three-story building occupied by the California Baking Company at Fillmore and Eddy streets, San Francisco, into a market and office building, at a cost of $150,000. Plans have been completed by Mr. Heiman for a $65,000 addition to the Ross General Hospital and drawings are being made for a $35,000 store building at Burlingame for Mr. George Roos and a $15,000 store building at San Rafael for Mr. R. Magnes.

Addition to Mausoleum

Architect B. J. S. Cahill of Oakland, has completed plans for a reinforced concrete annex to the catacombs at Cypress Lawn Cemetery, Lawndale, San Mateo county. There will be 1000 crypts. The cost of the new structure is estimated at $200,000.

Orpheum Theater, Los Angeles

Working drawings are being completed by Architect G. Albert Lansburgh of San Francisco and Los Angeles, for a new Orpheum theater in the Angel City to cost $1,250,000. The structure will be a combination office and theater building and will occupy a central site on Broadway, between Eighth and Ninth streets. Mr. Lansburgh is also designing a six-story Class A structure to be erected on the south side of Hollywood boulevard for the C. E. Toberman Co. to cost $1,000,000. Plans are being completed in the same office for the Alvarado school for the City of San Francisco and sketches are being prepared for a $15,000 residence in Thousand Oaks, Berkeley, for Dr. W. W. Kemp.

Office Building and Warehouse

Architects Weeks & Day of San Francisco, are at work on preliminary plans for a six-story reinforced concrete office building and warehouse to be erected in the block bounded by Bryant, Fremont, Beale and Brannan streets, San Francisco, for the Baker, Hamilton & Pacific Company. A sum in excess of $1,000,000 will be expended on the improvements. The same architects are completing plans for an eight-story Class A office building for the Firemen's Fund Insurance Company. The structure will face Sansome street and is to adjoin the company's present building on California street. MacDonald & Kahn will be in charge of construction.

Hotel Addition; Municipal Offices

Architects Miller and Warnecke of Oakland, have completed plans for a three-story addition to the Hotel Taylor in Paso Robles. The ground floor will have offices for officials of the Paso Robles city government, police and fire departments, while the second and third floors will provide forty-four additional rooms for the hotel. The cost of the improvements is estimated at $50,000. The same architects have prepared preliminary plans for a county hospital and jail at San Luis Obispo.

Department Store Building

Architect Ernest L. Norberg, Balboa building, San Francisco, is completing plans for a department store building in Burlingame for Levy Bros. It will have 100 feet frontage on Burlingame avenue.

School Architect Has Much Work

Architect William H. Weeks, 369 Pine street, San Francisco, reports that he is completing plans for the new West Side Union High School building at Sunnyvale, which is to cost $250,000; that a contract has been awarded for a concrete gymnasium and shop building at Lemoore; that plans have been completed and bids are being taken for a two-story and basement concrete orphanage at Pomona for the Methodist Home Missionary Society; that plans have been finished for a brick veneer gymnasium for the Pomona High school; that the office is at work on a two-story brick bank building to be occupied by the National Bank of San Mateo. Mr. Weeks will build for himself at Watsonville a $25,000 reinforced concrete store building, the drawings for which are being made.

Building Brisker in Fresno

Architects Swartz and Ryland, Rowell building, Fresno, write under date of September 15th:

"We are preparing plans for a Lodge and Club building to be erected for the Fraternal Order of Eagles in Fresno, at a cost of $200,000. Preliminary plans now under way call for a three-story and basement building, 75x125, class C construction. We are also preparing plans for a $16,000 residence for Mr. Herbert G. Miles, same to be one-story with terra-cotta tile roof, rough plaster exterior; also plans are under way for a building to be erected at Hanford for the American Legion at a cost of $45,000; and a rooming house to be erected in the Cosmopolitan quarter of Fresno for Mr. A. G. Leverone at a cost of $10,000.

"We have under construction at the present time a residence for Mrs. A. B. Clark costing $25,000, a residence for Mr. Cleve Stout costing $11,000 and a City Hall at Lemoore costing $30,000.

"We would also state that we find conditions in the building line much better than they were six months ago, and we believe that the outlook is good for a prosperous building year."

Designing Oakland Buildings

Mr. Leonard H. Ford of the East Bay Planners, 304 14th street, Oakland, has completed drawings for a three-story brick apartment house at Fifteenth and Madison streets, Oakland, for the Coit Investment Company to cost $100,000; also a one-story brick store building for Mr. F. L. Larson to cost $8500; a hollow tile auto camp at 81st avenue for Mr. George Singleton to cost $12,000; a Dutch Colonial residence on the Trestle Glenn road, Oakland, to cost $10,000; and a two-story frame apartment house on Bella Vista avenue for Mrs. Kendall to cost $8500.

Community Apartments

Architect Henry C. Smith, Humboldt Bank building, San Francisco, is preparing plans for a twelve-story Class A community apartment house to be erected at Jackson and Steiner streets, San Francisco, at an estimated cost of $450,000. There will be sixteen apartments.

School Architects Named

The San Francisco Board of Public Works has commissioned architects to prepare plans and specifications for the following school buildings:

Architects Ward and Blohme, Lafayette school, in S. Anza street, between 36th and 37th avenues.

Architects Frederick H. Meyer and Albin R. Johnson, Henry Durant school, Buchanan and O'Farrell streets.

Architect John Reid, Jr., Hearst school, Webster street, between Oak and Page streets.

Architect G. A. Applegarth, Edison school, W. Dolores, between 22nd and 23rd streets.

Architects Weeks and Day, Hawthorne school, E. Shotwell street, between 22nd and 23rd streets.

It is stated that the cost of each of the above structures will be $500,000 or more.

Engineer Has Much Work

Structural Engineer T. Ronneberg, Crocker building, San Francisco, has been commissioned by the National organization of the Y. M. C. A. to prepare the structural plans for the new eight-story Navy Y. M. C. A. building to be erected in San Francisco at an estimated cost of $900,000. Carl Werner is the architect. Mr. Ronneberg has completed the structural plans for a ten-story Class A store, office and loft building to be erected on Post street, west of Powell, San Francisco, for Mr. Selah Chamberlain, and he will also act as manager of construction. Mr. Ronneberg was the structural engineer for the twenty-six-story telephone building now being erected on New Montgomery street, between Mission and Howard streets, San Francisco.

Designing Hotel and Garage

Architects Kuhn & Edwards, 985 Market street, San Francisco, are preparing preliminary plans for a four-story reinforced concrete store and hotel building in Burlingame, estimated to cost $150,000. The same architects have completed drawings for a one-story concrete auto sales building and garage in Redwood City for the Dodge Automobile Agency.

Newspaper to Build Home

The San Francisco Bulletin will build a new home on the north side of Mission street, near Fourth, San Francisco, to cost $400,000. Architects Ashley & Evers, 58 Sutter street, San Francisco, have prepared preliminary plans for a six-story building.

Sacramento Church

Drawings have been completed for a $90,000 church of frame and brick veneer construction to be erected at 21st and J streets, Sacramento, for the Grace Methodist Episcopal Church. The architects are Woollett & Lamb.

Personal

Architect Edward M. Adelsohn announces he is now located in his new office in the Municipal Bank building, Brooklyn, N. Y.

Mr. C. E. Perry, Jr., has moved to 906 Santa Fe building, San Francisco.

Mr. Samuel B. Birds, architect, has moved from 6030 Hollywood boulevard to 1201 North Orange drive, Los Angeles.

Mr. George F. Buckingham, C. E., has moved from 530 Bush street, San Francisco, to 1836 Euclid avenue, Berkeley.

Messrs. Marston, Van Pelt & Maybury, architects, have moved from 600 Chamber of Commerce building to 29 South Euclid avenue, Pasadena.

Mr. Leffler B. Miller, architect, has moved from 420 South Spring street, Los Angeles, to 1408 Arch street, Berkeley.

Mr. Marshall A. Dean, architect, has moved from 825 Pine avenue, Pacific Grove, to 498 Weldon avenue, Oakland.

Mr. Ernest Flores, architect, has moved from 2534 Soito avenue, Campbell, to 545 San Pablo avenue, Richmond.

The California State Board of Architecture, Northern District, has issued a certificate to practice architecture to Mr. Will M. Bliss of San Francisco.

Mr. Robert Greig, former building inspector of Berkeley, has been appointed director of housing under the State Immigration and Housing Commission, succeeding Architect E. G. Bangs, who is now associated with John Galen Howard, San Francisco.

Messrs. F. T. Georgeson, architect, and C. E. Tabor, engineer, announce the removal of their offices to the Standard building, Sixth and G streets, Eureka.

Architect John K. Branner, 251 Kearny street, San Francisco, recently returned from four months travel abroad. Mr. Branner, who is a fluent French scholar, visited all the European countries of interest architecturally, including France and Spain.

Architecture in U. S.

America is in no danger of following ancient Rome into decay, according to Prof. William A. Boring, director of the School of Architecture of Columbia University, in his annual report. The resemblance of American public buildings to those of Rome, Prof. Boring states, should not lead to the conclusion that the final stages of the Roman Empire will be repeated here.

"The majority of American buildings are of a new system of construction," he declares. "Students are guided to personal and independent thought in design, and instruction in the achievements of the past lead to productive imagination and finally to vision. This is the power to give definition to ideas; and our problem in the School of Architecture is to stimulate the imagination and train the vision of the students."

Bids Must Be Opened Publicly

Letters have been sent to architects in Los Angeles by Secretary E. Earl Glass of Southern California Chapter, Associated General Contractors, notifying them that the Chapter has adopted and has decided to make effective at once a rule requiring that bids on all projects costing more than $100,000 be opened in the presence of bidders. This rule was proposed and adopted a year ago, but has been held in abeyance pending assurance of co-operation on the part of architects and engineers. A score of the leading architects of Los Angeles have expressed their willingness to cooperate and the Chapter has decided to make the rule effective. Members will refuse to submit bids on jobs when the owners decline to open bids in the presence of the bidders. The rule as adopted by the Chapter is as follows:

"All proposals estimated by the owner's architect or engineer to cost over $100,000 shall be opened and read by the owner or his agent at the pre-arranged time and place and in the presence and hearing of such bidders or their representatives as care to attend."

Galt High School

Plans have been prepared by Architects Davis, Heller & Pierce, Delta building, Stockton, for a one-story brick and concrete high school building at Galt to replace the building recently burned. The structure will cost $125,000. The same architects have completed plans for a three-story store and lodge building to cost $100,000 for the Modesto Lodge of Elks.

Addition to Eureka Hotel

Plans have been completed by Mr. Frederick Whitton, 369 Pine street, San Francisco, for a three-story addition to the Eureka Inn, which will cost close to $100,000. There will be provision for fifty-one additional rooms. The structure is to have a fire sprinkler system.

Branch Post Office

Architects O'Brien Bros. of San Francisco, have completed plans for a one-story brick branch post office and store building to be erected at Ocean avenue and Watson street, San Francisco, at a cost of $35,000.

Los Angeles Gets Convention

The next annual convention of the National Association of Builders' Exchanges, it is announced, will be held at Los Angeles, February 23 to 26, 1925.

NO city should be without its architectural club, which the practicing architects of the community should support freely with their money, their time and their interest.

Commends Work of Association

Peter B. Wight, who signs himself the Blind Ex-Architect, has written the following letter to Editor Davidson of the Illinois Society of Architects Monthly Bulletin, telling of the commendable work being done by the Allied Architects' Association of Los Angeles:

"I am sending you the enclosed clipping from yesterday's paper not for you to treat me as a correspondent of the Bulletin, but merely to enable you to tell what is being done by the "Allied Architects Association" of Los Angeles and Pasadena, of which you have heard so much.

"This, I think, is the first complete building that it has undertaken to control in every respect for the county supervision (body) of Los Angeles County. It is one of the first "memorial" buildings to be erected in this country. It will be commenced this week, built and paid for by the tax-payers of the County, and all architectural services will be rendered by allied architects, who will furnish all professional services connected with its erection, having held a competition for design among its own members under the rules of the A. I. A. and made its own selection. I think you will perceive that this will keep at least one public building from falling into the hands of any architectural "skate", which I believe is the object of the "Allied Association". All the members belong to the Institute and the Southern California Chapter.

"It is the Association which gave to the A. I. A. the complete furniture of one room in the Octagon at Washington at an expense of $5,000. All the members are well off and able to give their services where they will do the most good. Look out for their acts, for they will be interesting.

Yours sincerely,
PETER B. WIGHT,
Blind Ex-Architect."

Compound Interest

Fifty years ago the architecture of America was the worst in the world. It was a flagrant condition deplorable to contemplate. Fortunately for us a small group of Americans undertook, not without opposition, however, to improve the architecture of this country. These few individuals were torch bearers, to show the people what real architecture was. There was little appreciation of them by the general public. The general public always resists any innovation or improvement, and anything new will perish unless persistent.

One characteristic of art in general has been its persistency. Gradually the public was educated through the mediums of our schools, our writers and our expositions. The foreign art displayed at our expositions has done more to awaken the American public from its lethargy than any other one medium. We began to realize how far behind we really were in all matters of art. Gradually there came a turn for the better, and today not a country in the world appreciates art more than does America.

We are now receiving the benefits on the original investment made by the few many years ago. We are beginning to collect compound interest on the investment in art. This compound interest consists of appreciation, than which no greater satisfaction exists.—Washington State Architect.

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(ORGANIZED 1857)

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With the Engineers

California's "Show Road" Into the Yosemite Valley

The Use of Convict Labor in Road Building

By C. F. JOHNSON, C. E.

THE State Legislature of California in 1923 passed the present Convict Law, which is the first of its kind to be enacted in the United States. This new law requires the granting of a compensation to all convicts working on State roads. Convict labor was used on roads in California as early as 1915, but no compensation was paid until the enactment of the present law.

This law provides that the Highway Commission may pay a maximum of $2.50 per day. However, experience showed that it cost $2.10 to keep the men at work under the former law, and this latter figure was set as the wage to be paid. The law provides that the Commission charge to the convicts the cost of transportation, meals, clothing, medical care, camp overhead, guarding, and the payment of rewards. When all this has been deducted, the prisoner is entitled to retain a maximum of seventy-five cents per day. The average earnings of the convicts amounts to fifty cents per day, although, there are a number that earn the maximum amount.

The old system allowed a man, when he left prison upon a parole or discharge, a suit of clothing and $5.00. Under the new law, he gets his $5.00, plus his earnings at the road camp, which has amounted to $200.00 in numerous cases.

These road camps are honor camps and the man must make voluntary application and have a good record to avail himself of the opportunity of working in one. So far, it has been a success, and the turnover has been extremely low, averaging about eight per cent.

COMPLETED PORTION OF YOSEMITE VALLEY ROAD FROM THE SUMMIT TO BRICEBURG

One of these road camps is located at Briceburg on the Merced river. The convicts are building the last lateral of the Show Road into Yosemite Valley. The present road from the town of Merced into the Valley is ninety miles long, fifty miles of which has poor alignment and steep grades and is not open the entire year as it goes over summits, which are covered with deep snows in the winter. The new route passes over the present road as far as Mormon Bar. This section of the road includes fifteen miles of concrete pavement and twenty-five miles of fine gravel road. From Mormon Bar the road passes through the old town of Mariposa traversing up Stockton Creek to the Bear Creek divide,

STEAM SHOVEL AT WORK

following Bear Creek down to Briceburg on the Merced river, a distance of some thirteen miles. The divide at the headwaters of Bear Creek has an elevation of about 2,900 feet, which divide is the only one of any consequence over which the road passes. The portion from Mariposa to Briceburg was recently completed under contract; the balance of the road to Mariposa has been constructed for some time and is in fine condition, being maintained by the State Highway.

The last lateral of this road follows Merced river from Briceburg to El Portal, a distance of seventeen miles, and has a grade of not more than one per cent to El Portal, where it connects with the existing road from the Valley. The twelve miles of existing road from El Portal to Yosemite Village was constructed prior to this time and in this distance it rises approximately 2,000 feet to the floor of the Valley, some 4,000 feet in elevation and provides an access into the Valley for the entire year. This new route has grades not in the excess of seven per cent, and the total length is about eighty-two miles.

At the present time the convicts are

THREE 30-INCH CORRUGATED CULVERTS

These culverts have been installed on the completed portion of the Yosemite Valley Road. Note bevelled ends to conform to headwall, the pipes being placed at an oblique angle.

COMPLETED PORTION OF YOSEMITE VALLEY ROAD

working in the sixth mile of this last lateral from Briceburg to El Portal, and it is estimated that the total road will be available for traffic in the summer of 1926. There are working 260 convicts and a few free men, who are shovel operators and mechanics. When at work the men are distributed along the bank of the river as follows: The brush gang, (those who are clearing the right of way), the trail gang, (those who are building a narrow trail along the grade line), machine and hand drillers, powder gang, muckers, pick and shovel men, steam shovel crew and finally the slopers. To date, four miles of roadway are complete, besides considerable clearing and drilling ahead. This road is to be twenty-six feet wide and has numerous concrete bridges and corrugated culverts. Nearly all of the waterways of which the cross sectional areas are seven square feet or less are corrugated pipes, and many larger streams are cared for by double or triple pipe installations like the one shown in the accompanying photograph. The yardage moved to date is 215,000 yards, the majority of which is hard rock. This work has been done for the low cost of seventy-seven cents per yard and includes all overhead, and is under the direction of the California State Highway Commission.

During the year of 1923 thirty thousand automobiles and approximately 130,000 people visited the Yosemite Valley. With the construction of this new road, which will keep the Valley open to motor travel for the entire year, it is estimated that the travel will multiply tremendously. This National Park will become in many respects the most popular in the United States.

Method of Laying Concrete Sidewalks

An interesting folder, giving graphic illustrations of the methods of laying reinforced concrete sidewalks, driveways and cellar and garage floors, has recently been published by the National Steel Fabric Company. As far back as January 5th, 1922, Engineering News-Record, in a resume of the concrete situation during the previous twenty years, said: "The recognition of the structural capabilities of concrete reinforced with steel opened up a new era in engineering design and construction." It is the ease with which concrete can be used by even the veriest tyro that has brought it into very popular use, and, furthermore, made it seem unnecessary to use a steel "binding" or reinforcement in order to overcome its natural limitations.

It is an admitted fact that concrete in particular and all other building materials in general, should be constructed by men who are specialists in their particular line.

The addition of "binding steel" or reinforcement (the latter being a more popular term) adds but very little to the cost of construction of concrete sidewalks, driveways, cellar and private garage floors, but unquestionably saves money by adding years of life to such construction.

Copies of the folder are available by applying to the National Steel Fabric Company, Pittsburgh, Pa., or to the Coast representatives of the company in San Francisco and Los Angeles.

$50,000 Residence

Architects Bliss & Faville are preparing plans for a $50,000 residence at Jackson and Octavia streets, San Francisco, for Mr. Samuel H. Levin.

Engineer Finds Monolith Plastic Cement a Splendid "Workable" Mixture

THE Long Bell Lumber Company, at Long View, Washington, recently completed the construction of the pump house and outlet culverts of a large diking improvement, under the direction of William G. Brown, contracting engineer of Portland, Oregon. The basement, built of Monolith Plastic Waterproof Portland cement, is under a seven-foot static head of water.

By an interesting coincidence, the circumstances attending the construction put to a thorough test the distinctive qualities claimed for Monolith Plastic cement. In a letter to the Monolith Company, Mr. Brown summarizes those claims and then recounts just how they were tested. Mr. Brown's letter reads as follows:

"At the time of placing the order with you three principal claims of superiority were advanced for this cement—

1. That it was water repellant in its dry state and would stand more exposure to dampness than ordinary cement.
2. That the concrete mix in which it was used was more plastic and less liable to separation of coarse from fine aggregate when being chuted or poured.
3. That the finished concrete was more nearly waterproof.

"Your claims appearing to be somewhat extravagant, I, as stated above, promised to give you my candid opinion on the three points mentioned after a fair trial.

"The first shipment to arrive was transferred from steamship to barge at Stella, Washington. Tarpaulins ordered were furnished, but the 2x4 lumber with which the deck was to be stripped did not arrive. The cement was therefore loaded directly on the deck of the barge during the first real rainstorm of the season (December 4, 5, 6, 1923) and covered with tarpaulins. The barge was unevenly trimmed and when the cement arrived at the job on the afternoon of December 5th, there was water three inches deep against the lower tier of sacks on the high side of the barge.

"The cement was not all unloaded and under cover until noon of December 6th. I confidently expected to lose at least 400 of the 2400 sacks composing the shipment.

"On account of slides and difficulty with the foundation the work was greatly delayed and the last of this first shipment was not used until early in April. Not a sack was sufficiently caked to require reconditioning or sifting. All went into the mixer and made A1 concrete.

"As to your second claim, while admitting that this cement had made a remarkably 'workable' mixture, I was not prepared to say it was better than any other first-class cement, until about two weeks ago when we ran out of Monolith and substituted about 600 sacks of another brand; a well known and very good ordinary cement. When the last batch of Monolith Plastic went through and the first batch of the ordinary cement was dumped into the chute the difference was immediately apparent. Hopper man, gang foreman, spreaders and tampers all insisted that the mix had been changed. There was no disputing the fact that the plasticity and workability of Monolith Plastic was greatly superior.

"As to making a waterproof concrete, I have not yet been able to make a fair test, so have nothing to say. But if it makes good on the third as it has on the first two points of superiority claimed, you have a remarkably good article."

Says Aviation Will Change Architecture

That aerial transportation will cause the remaking of American cities was predicted by George R. McKay of Cleveland at the convention of the National Association of Building Owners and Managers at Colorado Springs. Mr. McKay said:

The time is not far distant when city skyscrapers will have to provide a landing place on their roofs for airplanes or passenger dirigibles. If I live long enough I expect to see height limits of cities made uniform for the business district, which would require the builder to build up to that limit instead of telling him he can build no higher than a certain limit. Thus the business district will present a flat appearance to the airman and make landing easier. Possibly girders will be flung across streets for connecting bridges so that a portion of the district will be an ideal landing field.

We must recognize that air transportation is coming and that some day it will be as commonplace as motor traffic is today. The speed at which Americans feel they must do business puts suburban landing fields out of the question as terminals for air lines. Delivery of passengers must be made close to the business district.

Builder not Liable for Injuries

A painter employed by a subcontractor was injured and sought compensation from the general contractor. In making his contract with the subcontractor the general contractor had included a requirement that the painting company insure its workmen. The subcontractor did not comply with this provision in the contract. The general contractor thereupon posted notices on the job stating that he would not pay compensation for injuries sustained by men employed by the painting subcontractor. The Pennsylvania Workmen's Compensation Board held that the general contractor had complied with all provisions of the Compensation act, and that it was not his duty to see that the subcontractor insured his employes. The general contractor was therefore not liable for compensation.

—Paint and Varnish Journal.

Field of the Contractor

Building Contractors Should be Licensed by the State

By OSCAR W. ROSENTHAL
Director at Large, Associated Building Contractors of Illinois

THAT protection of the public against unscrupulous, dishonest, inefficient and careless persons must necessarily be a primary consideration is unquestioned.

Efforts of the State to give to the public this protection have brought about a supervision of private industry that to many seems extreme. It is generally admitted, however, that in most instances some supervision or control is essential.

The necessity for state control in the practice of medicine, pharmacy, dentistry, law, architecture and engineering; of banks and the sale of securities, and of the many other branches over which the state has extended its supervision is unquestioned by any who have given the matter thought.

There have been no acts passed by the Legislature that would have been productive of greater good than those for the control of architecture and engineering, had legislators gone one step further and enacted some statutes for the control of the builder. As the matter now stands, the protection is incomplete and largely fails of its purpose.

The registration of architects and engineers leaves no question that the legislature is alive to the hazardous nature of a building operation and recognizes its public character.

The Mechanics' Lien Law, the Workmen's Compensation act, and the many precautionary measures for the protection of the workingman and the public which are left for enforcement to the State Factory inspector, are further evidence that our lawmakers realize the perilous and unusual character of a building operation.

The various building codes and sanitary measures give further assurance that, every effort is being made to safeguard the public health and welfare, but the one great fundamental protection to which the public, the workingman, the future occupant of the building, the investor, and the seller of materials are entitled, is the control of those who practice the art of building, by a Licensed Board created by the State; a License Board with power so broad that it could demand of anyone desiring to engage in the practice of building, that he give satisfactory evidence of his ability to practice the art in the best and most efficient manner; a Board with the power of revocation of licenses.

The registration of architects and engineers assures the public that the codes will be adhered to so far as the design of structure is concerned, and that, the architecture and engineering will be sane and safe; but, the execution of the design is still in the hands of an unregistered builder, who has never been required to give evidence of his ability to carry on successfully so dangerous and important and so public an undertaking.

Enforcement of the various codes covering a building operation must of necessity be perfunctory and left largely to the honor of the builder when building is at its height. When an infraction of the code is discovered, the work is stopped temporarily or the correction is ordered. The penalties are absolutely insufficient. The architect and the engineer do not necessarily supervise the execution of the design. The responsibility resting upon the builder is one that should be placed only upon the shoulders of those who have given evidence of the necessary ability, and who are under State control.

There is expressed everywhere throughout our statutes the feeling that control of building is regarded as of extreme importance. Yet the efforts to control, as evidenced by the various building and sanitary codes, the Mechanics' Lien Law, the Workmen's Compensation Act, the architects and engineers registration acts, and the various safety measures, fail to complete potency so long as the builder (the one who carries on the actual construction of the building) is not directly answerable to the State.

The economic waste and the loss of life due to incompetence, inefficiency and lack of moral responsibility would be surprising could the facts be known. Factors of safety employed by architects and engineers, based of course largely upon experience, are not dependent entirely upon the uncertainty of materials and the natural carelessness of the craftsman, but, also upon the inefficiency and the lack of even reasonable, to say nothing of thorough supervision or knowledge on the part of the builder. What seems to be an excessive cost of liability insurance and contrac-

Why Send a Check With a Bid?

THE question of contractors furnishing a certified check with bids on private work comes up so frequently that it seems desirable to set forth in detail the reasons governing the contractors' refusal to meet this requirement. This rule was adopted by the Master Builders' Association of Iowa several years ago, says a writer in the American Contractor, not in an arbitrary spirit, but for what were believed to be sound and equitable reasons.

The fundamental principles governing this stand are found in the primary differences between public and private work. In the instance of public work, which may be defined generally as an improvement undertaken by a public corporation, or a political and governmental subdivision, the gates are open, and any individual operator or company who can or thinks he can build the building, may demand a set of plans and submit a figure. In this situation, it certainly is desirable, and in fact necessary, that the public corporation be protected by a certified check deposited by all bidders as a guarantee that the successful bidder will sign a contract and furnish a satisfactory bond. This actually is a protection to the taxpaver to which he is fully entitled.

In private work we find a very different situation. The architect is privileged to invite whomsoever he wishes to bid, and has an opportunity to keep out undesirable bidders. It may be that this prerogative is not exercised often, but it exists just the same. The mere fact that a contractor is given a set of plans and permitted to figure the job of private work is in itself a sufficient guarantee of his ability and integrity.

There also is the further difference that in public work there is a definite appropriation for the improvement contemplated. The voters of the district or the governing body have set aside definitely a certain sum to be used for no other purpose than to pay for the construction of the improvement. In private work there is no such appropriation, and the contractor has no assurance that the owner either can or will pay him after the building is built. In brief, the bidder is asked to post a forfeit that he will sign a contract to build a building in which, like other building operations, there may or may not be a profit, with the additional chance that he may or may not be paid.

Likewise, in the case of public work, there is a board or a definite governing body charged with the proper performance of various duties, and among them is the duty to see that the proper building is erected and paid for. This latter duty may not always be so prominent in the minds of the board, but it is a very real part of their duty in the transaction. In private work, the contractor not infrequently is compelled to deal with a general building committee, usually without previous experience or qualifications, selected for the occasion only, and charged with no particular duty except occasionally to harass the contractor in his efforts to complete the building. Being of a voluntary nature, this committee sometimes thinks that its functions are completed when the building is completed, regardless of whether the contractor is paid.

The private owner is under no obligation to award the job to the lowest responsible bidder, or for that matter, to any other bidder, regardless of qualifications or lack of them. In brief, he is under no obligations whatever. It certainly is not equitable to bind the bidder by the deposit of a certified check, subject to the whims of the owner, without placing some definite corresponding obligation on the owner.

The question as to what constitutes public work and what constitutes private work should not be confused with the use to which the proposed structure is to be put. An instance is a church or a Y. M. C. A. building, which from the standpoint of use is a public or semi-public building, but which actually is private property and private work.

The by-laws of the Master Builders' Association, which provide that no member shall deposit a certified check with a bid on work of a private nature, give this definition:

"All bids, except those made on improvements for the state, a county, or a municipality, wherein the statutes provide that a guarantee check or bond be submitted with the proposal, shall be considered private work."

Another practical definition used in determining this question is that if the contract for the proposed building may legally be let without publicly advertising for bids, it is considered private work.

---

tors' bonds also is due largely to these conditions.

Public welfare demands that fraud and collusion practiced in connection with building operations be stopped, and this can be done only through State control.

There are many engaged in building who are wholly unequipped by experience, temperament, or a sense of moral responsibility for so dangerous and difficult a profession. To permit others to engage in the practice without making an effort to ascertain their fitness would indeed be a mistake.

NEW BUILDING FOR JAS. A. NELSON, INC., SAN FRANCISCO

Heating Firm Occupies Splendid New Home

JAMES A. NELSON, Inc., heating and ventilating engineers and contractors, are now established in their new home at 10th and Howard streets, San Francisco. It is seven years since Mr. Nelson entered the San Francisco field as a heating and ventilating specialist, his first large shop being at 517-19 Sixth street. A steady growth of business finally made it necessary to seek better quarters, and about a year ago the company determined to erect a building of its own — one that would answer the needs of the firm for years to come.

Plans were prepared by Architect Harry Thomsen, in the office of Architect George W. Kelham, calling for a building, 149 x 100, one-story and

INTERIOR OF SHOP, JAS. A. NELSON, INC., SAN FRANCISCO

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mezzanine, with approximately 14,900 square feet of floor space, and providing one of the largest sheet metal shops in the city. The latest machinery for this class of construction has been installed which makes possible handling large contracts on short notice, not only for heating and ventilating apparatus, but for hotel and kitchen equipment. This latter department has lately been established with gratifying results. Heretofore, it has been necesary to wait on Eastern factories for kitchen equipment, with frequent delays in shipment and consequent annoyance to owners.

Besides the commodious shop, space has been provided for the executive offices on the ground floor, attractively finished in Philippine mahogany. Above the offices is a large, well-lighted drafting and estimating room.

James A. Nelson, Inc., is composed of Mr. James A. Nelson, president; Mr. C. N. Dutton, vice-president and Mr. E. L. Nattkemper, secretary. Mr. Dutton was formerly in charge of the heating department for Mangrum & Otter.

Some of the more important heating and ventilating contracts completed by Jas. A. Nelson, Inc., are the following: Standard Oil building, Matson building, Federal Reserve Bank building, Anglo London-Paris Bank building, Fitzhugh building, Walter N. Moore building, Annex to St. Francis hotel, Loew's Warfield and Castro theaters, new Mission High school, Santa Maria High school, Parlier High school and Bank of Italy in Los Angeles. The company is now installing the heating apparatus in the Pacific Gas & Electric building and has recently received a contract for the heating and ventilating in the Temple Emanu-El, a new synagogue to be erected at Arguello boulevard and Lake street, San Francisco, at a cost of $1,000,000.

New Contracting Firm

Mr. Frederick R. Siegrist has severed his connection with the Larsen-Siegrist Company, Inc., and with Mr. N. H. Sjoberg has formed the F. R. Siegrist Company, general building construction, with offices in the Williams building, San Francisco. Some of the more important contracts taken by the Larsen-Siegrist Company when Mr. Siegrist was associated with it was the Napa Union High school, Vallejo Odd Fellows building, Alhambra High school building, St. Elizabeth's school in Oakland, Wurlitzer building in Los Angeles, Sonoma High school and the Thousand Oaks Masonic Temple.

New Edition of Guide

The third annual edition of The Guide is ready now for engineers, architects, contractors and others interested in practical design data on heating and ventilation.

The Guide 1924-25 contains 518 pages, and is bound in blue cloth stamped in red and gold. It is divided into four sections.

The Guide may be obtained from the American Society of Heating and Ventilating Engineers, 29 W. 39th street, New York City, for $3.00 per copy.

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THOS. J. COLEMAN

This Issue—Portland Architecture

The ARCHITECT & ENGINEER

NOVEMBER 1924

Published in San Francisco
50 cents a copy - $2.50 a year

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Published Monthly by
THE ARCHITECT and ENGINEER *Inc.*
626-627 Foxcroft Building-San Francisco
W. J. Kieruff, *President* Frederick W. Jones, *Vice-President* L. B. Penhorwood, *Secretary*

WILCOX MEMORIAL HOME, PORTLAND
LAWRENCE AND HOLFORD, ARCHITECTS

Frontispiece
The Architect and Engineer
November, 1924

THE ARCHITECT AND ENGINEER

NOVEMBER
1924

VOL. LXXIX
No. 2

SKYLINE VIEW RETAIL DISTRICT, PORTLAND, OREGON

Some Recent Architecture in Portland, Oregon

THE work of Portland, Oregon, architects, illustrated in this number, indicates fine appreciation of good design by the profession in the Northern city. Lack of space prevents a more extended presentation, but the limited number of pictures gives the reader an appreciable idea of what is being accomplished along architectural lines in the Webfoot metropolis. The designs of commercial buildings show careful execution, while those structures of semi-public character reflect study and conscientious planning. In all cases there is a happy combination of beauty and practicability which are the two contributing forces of successful design.

The First National bank building, designed by Architect C. A. Coolidge, has its inspiration in the classic details of the Parthenon. The exterior columns support a pediment in which is placed the state seal, flanked on either side by symbolic figures. Imported marble has been used altogether in the interior finish.

AMBASSADOR APARTMENTS, PORTLAND
CARL LINDE, ARCHITECT

SOVEREIGN HOTEL, PORTLAND
CARL LINDE, ARCHITECT

MONASTERY OF PRECIOUS BLOOD, PORTLAND
JACOBERGER & SMITH, ARCHITECTS

WILCOX MEMORIAL HOME, PORTLAND, OREGON
Lawrence and Holford, Architects

WAITING ROOM, WILCOX MEMORIAL HOME
Lawrence and Holford, Architects

ELKS TEMPLE, PORTLAND, OREGON
HOUGHTALING & DOUGAN, ARCHITECTS

MAIN LOBBY, ELKS TEMPLE, PORTLAND
HOUGHTALING & DOUGAN, ARCHITECTS

Of the newer apartment houses in Portland the Ambassador, designed by Architect Carle Linde, is a creditable example of English Renaissance, done in rough brick and sandstone. A courtyard with fountain and arcade entrance are features of interest. Casement windows have been used throughout the large, spacious four, five and six apartments, each of which is equipped with automatic refrigeration. The first floor consists entirely of bachelor apartments. The building cost $350,000.

Of even more interest than the Ambassador Apartments is the Sovereign Hotel, also designed by Mr. Linde. Styled on the order of the

ELEVATION LODGE HALL, ELKS TEMPLE, PORTLAND
Houghtaling & Dougan, Architects

modern Renaissance, this apartment hotel of rough brick and terra cotta exterior, has two room apartments, each containing living room and vestibule, dressing room, kitchen and bath.

In designing and planning the Wilcox Memorial hospital, Messrs. Lawrence & Halford were confronted with the problem of creating a building of homelike character, at the same time not sacrificing any of the features that make for sanitation. Bedrooms and serving room facilities provide for about twenty patients, and operating and delivery rooms have been built in sufficient number to handle another wing. The construction is of reinforced concrete, faced with brick and cast stone.

The Second Church of Christ Scientist, designed by Architect Geo. Foote Dunham, is reputed to be one of the most complete and econom-

ically constructed edifices in the United States. The remarkable lustre of its flesh and amber colored opalescent windows, the daylight effect gained by using cornice instead of hanging lights, and the extraordinary acoustical treatment worked out through the angles of the dome, making ordinary conversational tone audible in any part of the building, have made this building a prototype for similar structures in various parts of the country. The exterior of this edifice is of interlocking white tile.

The Roy Caruthers home, adhering closely to Italian style throughout, designed by Mr. Whitehouse, occupies an estate of seven

LIBRARY, ELKS TEMPLE, PORTLAND, OREGON
Houghtaling & Dougan, Architects

and a half acres on the Columbia River Highway near Bridal Veil. At first glance the exterior view reminds one not a little of the Clark country home at Pebble Beach, California. On the first floor are a living room two stories high, an Oriental room, library, dining room, greenery, sun porch, flower room, kitchen, two servants' rooms with bath, and the necessary dining service, butler's pantry, etc. The upper floor is divided into three suites, one consisting of a sitting room, bedroom, dressing room, and bath for the owner, the second at the other end of the balcony of two guest rooms with bath between, and the third, built over the dining room of two more guest rooms and bath. The outdoor swimming tank has been so arranged that water may be tempered, when desired, from the main heating plant.

CARD ROOM, ELKS TEMPLE, PORTLAND
Houghtaling & Dougan, Architects

SECOND CHURCH OF CHRIST, SCIENTIST, PORTLAND
Geo. Foote Dunham, Architect

COUNTRY HOUSE OF MRS. ROY CARUTHERS
Morris H. Whitehouse, Architect

LIVING ROOM, HOUSE OF MRS. ROY CARUTHERS
Morris H. Whitehouse, Architect

PORCH, HOUSE OF MRS. ROY CARUTHERS
MORRIS H. WHITEHOUSE, ARCHITECT

FIREPLACE, HOUSE OF MRS. ROY CARUTHERS
MORRIS H. WHITEHOUSE, ARCHITECT

HOUSE OF MRS. ROY CARUTHERS, COLUMBIA HIGHWAY, OREGON
MORRIS H. WHITEHOUSE,
ARCHITECT

GARDEN FRONT, HOUSE OF MRS. ROY CARUTHERS
MORRIS H. WHITEHOUSE, ARCHITECT

HOUSE OF GEO. FOOTE DUNHAM, PORTLAND
GEORGE FOOTE DUNHAM, ARCHITECT

HOUSE OF GEO. FOOTE DUNHAM, PORTLAND
GEORGE FOOTE DUNHAM, ARCHITECT

HOUSE IN PORTLAND, OREGON
LAWRENCE & HOLFORD, ARCHITECTS

SCHOOL FOR THE BLIND, PORTLAND, OREGON
HOUGHTALING & DOUGAN, ARCHITECTS

INTERIOR CHAPEL, ST. PATRICK'S SEMINARY
MENLO PARK, CALIFORNIA

Ecclesiastical Rug for Menlo Park Chapel

*An ecclesiastical rug of rare texture and beauty is about to be placed in the recently completed chapel of St. Patrick's Seminary at Menlo Park, California, in memory of the late Archbishop P. W. Riordan. The rug—a marvelous conception of combined erudition, imagination and religious fervor, was designed by Mr. John MacQuarrie, artist and sculptor of San Francisco, at the instigation of the Rt. Rev. Edward J. Hanna, Archbishop of San Francisco. Executed in Austria in a mill that has been manufacturing textiles for more than a century, the rug was imported to this country under difficulties and at great expense. Some idea of its immense size may be had from the statement that when laid it will cover the center aisle of the chapel from vestibule to altar as well as the three steps of the altar and the entire altar floor, with extensions left and right to the thrones of the Archbishop and of the celebrant of mass.**

The following interesting description of the rug is contributed:

THE console strip sounds a prelude to the symbolism that follows. The starting motive there is the abatement of the waters and the upspringing of new verdure after the Flood. From the outstretched wings of the dove drops of water fall; in the dove's mouth is the branch of olive, and above all is the rainbow, the sign of God's covenant with man. The world's new verdure is fashioned like clover, suggesting the shamrock motive that is to come later. The outer border, identical with that of the stall strip, symbolizes the long struggle of religion against its enemies.

The stall strip has three distinct groupings indicative of three stages in the relations between God and man.

The first represents two outstanding incidents in the history of the Chosen People before they became a settled nation. The interrupted sacrifice of Isaac by his father Abraham is shown. The victim is bound upon the three stones of the altar; the slayer-to-be is bowed in grief; the sacrificial sword is ready; but the angel sent to stop the sacrifice hovers above. The other incident is the delivery of the Law to the Israelites amid the thunders of Sinai. The hands of Moses are outstretched to shield his people from the unbearable presence of Divinity, and from his fingers radiate the commandments of the Decalogue.

The second grouping of the stall strip symbolizes the inspired guidance of Israel by Samuel, prophet and judge, leading up to the kingship of David. Here is the harp of the royal minstrel, from which, like smoke from a censer, rise the might harmonies of his worship, finally intertwining to form the letter "M", the monogram of the Blessed Virgin Mary who sprang from the house of David.

The third and last motive of the stall strip is the cross, symbol of the fulfillment of the promises and prophecies of the Mosaic law. The feeling here is particularly delicate and etherial.

Ascending to the altar, the symbolism evolves from the history of Christianity in general to the theme of the main rug, the conversion of Ireland. The first step presents sunset upon the waters—the spread of Christianity to the West; on the second step, the anchor of true faith has taken firm hold; and on the third, the symbolism is of pagan Ireland, with the four-leaf clover, the good luck emblem of old Celtic worship.

The main spread of the rug shows the conversion of the Isle of Saints. In the center is the font of baptism surrounded by the holy vessels of the altar. About these symbols are bands of hearts, signifying conversion to the true faith; and embracing these, the shamrock, St. Patrick's chosen symbol of the Trinity. The inner border repeats the heart-symbolism, alternating with tongues of fire. In the outer border, at each corner, is the sanctuary lamp, with the episcopal crosier and

*Dimensions of the rug are: Console strip, 16 by 12 ft.; stall strip, 70 by 12 ft.; steps, one ft. 2 in. by 14 ft.; next step, 2 ft. 9 in. by 16 ft.; altar piece, 23 ft. by 21 ft.; both side pieces, 12 ft. by 9 ft.

ENTRANCE TO CHAPEL (FROM OUTSIDE), ST. PATRICK'S SEMINARY
MENLO PARK, CALIFORNIA

ENTRANCE TO CHAPEL (FROM INSIDE), ST. PATRICK'S SEMINARY MENLO PARK, CALIFORNIA

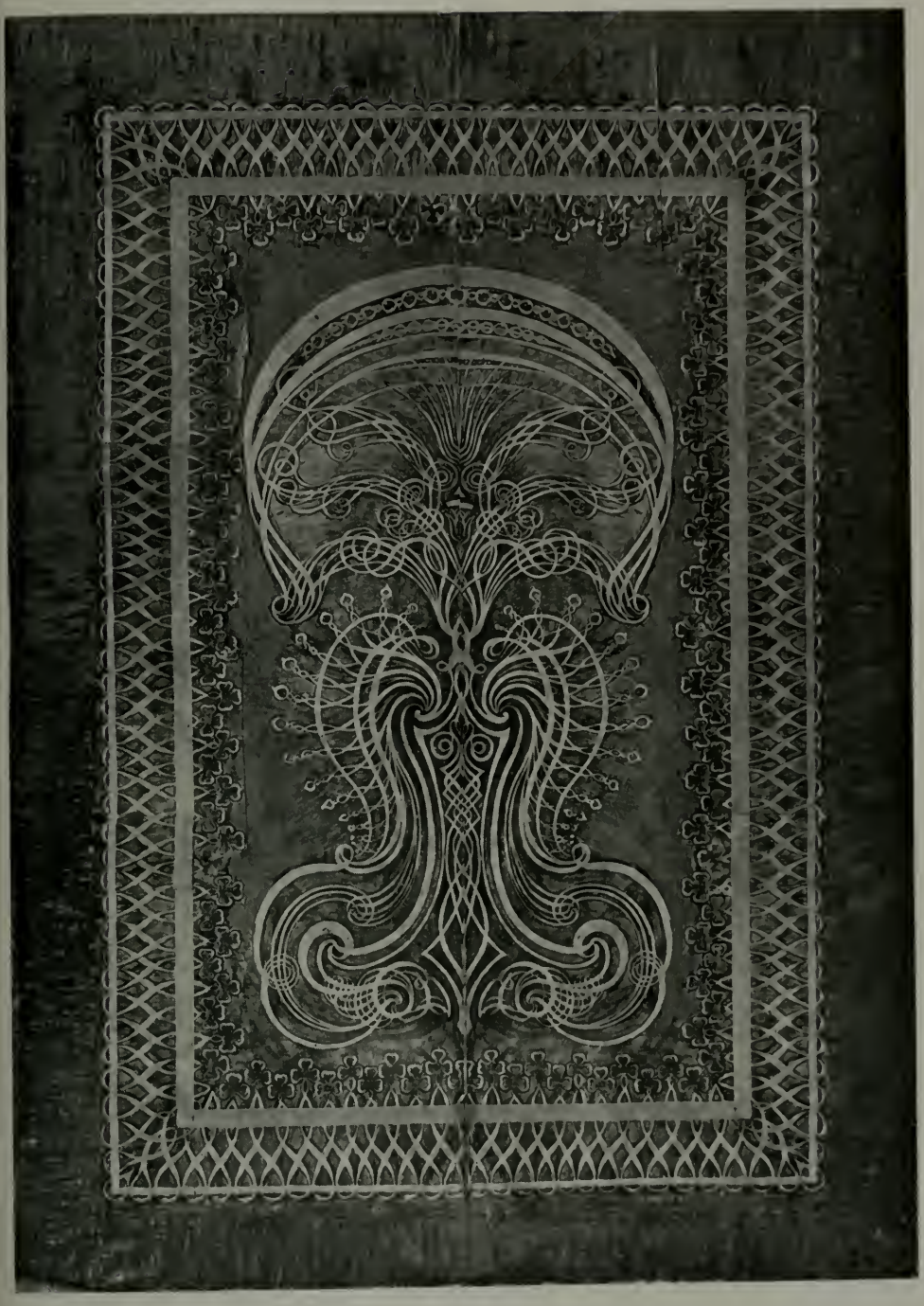
CHAPEL, ST. PATRICK'S SEMINARY, MENLO PARK
Jas. L. McLaughlin, Builder

PIPE ORGAN, CHAPEL ST. PATRICK'S SEMINARY, MENLO PARK

Photo of Complete Design of Ecclesiastical Rug for Chapel of St. Patrick's Seminary, Menlo Park, Calif., by John MacQuarrie.

Detail of Stall Strip (Center Motif)

DETAIL OF ALTAR STRIP, ECCLESIASTICAL RUG, CHAPEL
ST. PATRICK'S SEMINARY, MENLO PARK, CALIFORNIA



DETAIL OF CONSOLE STRIP, ECCLESIASTICAL RUG, CHAPEL ST. PATRICK'S SEMINARY, MENLO PARK, CALIFORNIA

mitre. Here, too, is the fleur-de-lis, reminiscent of St. Patrick's French education, if not of his birth. The dragon, ancient symbol of Satan, emerges, suggesting the never-ending struggle between good and evil.

In the small strips to left and right is an interesting bit of special episcopal symbolism. Bows and arrowheads, the chained stag with lowered head ready to charge—these are significant of the leadership of the bishop, and his fight against the powers of darkness. And there is an engirdling band of chalices, symbolical of the priesthood, the bishop's lieutenants in the warfare for religion.

Rug-making is as old as recorded history, and from the very beginning of the craft rugs were used to enhance the dignity of religious worship. The ancient Egyptian monuments establish the use of rugs in the sanctuary of Amen Ra. The prayer rug is familiar to all who have traveled in the Mohammedan world; it probably antedates the Hegira. Symbolism is the natural language of religion, and from remote antiquity emblematical ornament has been incorporated in the designs of rugs intended for hieratic purposes. Famous among students of rug history is the holy carpet of Arbedil with its ingenious designs of blossoms and leafy scrolls, its arabesques, its animal forms, and its cartouches enclosing inscriptions. With its thoroughly emancipated attitude toward art, Christianity early developed a sacred symbolism that ranged from the most appealing tenderness to the most awe-inspiring majesty, and as the conventions of this symbolism readily adapted themselves to the peculiar limitations imposed by the loom, the church lavished the riches of its foremost craftsmen on the rugs dedicated to ecclesiastical use. This rug by MacQuarrie is in the finest tradition of Christian symbolism, and well repays study.

* * * *

Our Skyscrapers Are Splendid, But—

THE terror of skyscrapers for London has brought out one of the most glowing tributes ever paid to them, says the Literary Digest. But the writer hopes in all conscience that they will be kept here and not be thrust upon a city like London, for example, which has ample space to expand laterally and no need to shoot up vertically. Mr. J. A. Spender is the perturbed Britisher who hears that Mr. Topham Forrest, architect of the London County Council, will visit us to "see how the thing is done" here, and may return to London with a few skyscraper ideas in his pocket. So Mr. Spender unfolds his fears to the readers of The Westminster Gazette (London), using them as a warning to London, but a paean of praise to New York. He can not, he says, imagine any man of common sense thinking it possible, even if it were desirable, to reproduce the skyscrapers for London. In New York the physical conditions of limited ground space give them "a certain appropriateness which extenuates the esthetic judgment." "The vision of them, far away on the approach by sea," adds Mr. Spender, "is an unforgetable thing which one stores in one's memory with the first view of Venice." But

> "Their beauty is a collective thing—the impression of an immense mass blended into the image of a fantastic cliff falling sheer to the water's edge. Seen separately, or in smaller numbers in cities where there is no necessity for them, they are frankly ugly, and obviously out of scale with the buildings surrounding them. To their architects—if architects are employed in constructing them—they must be a hopeless problem, and for two reasons. First, that their object being to save space, it is impossible to provide them with a base broad enough to carry their mass in a manner agreeable to the eye, and second, that their internal structure requires them to be pierced with innumerable lights for rooms of normal size. One is always seeing paragraphs in American newspapers adjuring architects of genius to get

busy on a really great design for one of these monsters. But to have a fair chance the genius would have to be allotted unlimited ground space and permitted to plan his building as a residence for giants, with rooms of gigantesque dimensions. Only so could he preserve the proportions which the eye looks for in architecture, and fit his building with windows suitable to its size instead of having to pierce it with innumerable little holes.

"But those details become unimportant when one sees the great New York massif in its most becoming light, which is toward evening from the East Side. To me the most fascinating spot in New York is the middle of Brooklyn Bridge. Since no one ever walks in America when he can ride, the traffic across this bridge is carried entirely in the street-cars and motors which run on the roadways to right and left and you may have the broad open space between, which is left for the foot-passenger, almost entirely to yourself at almost any hour of the day or night. Nowhere else in the heart of a great city can there be such a solitude, and from here toward sunset you get an incomparable view of the massif. Its outline is magnificent, and has all the quality of one of nature's great accidental designs. The color takes on the peculiar glow that is characteristic of New York, and the cavernous recessing gives it depth and mystery. Then as darkness comes on the innumerable windows, which are tiresome in daylight, begin to play their part in the loveliest scheme of illumination. One sees them as sudden arabesques on the side of the dark cliff or as strings of light hung in the air. They come and go as the inhabitants of the beehive switch on or switch off their lights, keeping the whole surface alive and moving. You may watch it by the hour without tiring.

"There is a different and cruder effect in Broadway after dark, when immense advertisements of colored light blaze out at you, and plunge back into darkness from incredible heights and make an enormous and incessant pantomime, of which Piccadilly-circus is only a twinkling imitation. As a screen for these displays the skyscraper is incomparable."

In spite of seeing behind the skyscraper what he calls "the American temperament," Mr. Spender thinks "the Americans themselves have made a mistake in transferring it to other cities where the conditions do not require it." Mr. Spender finds other things than the skyscraper which he believes worthy of engaging Mr. Forrest's attention:

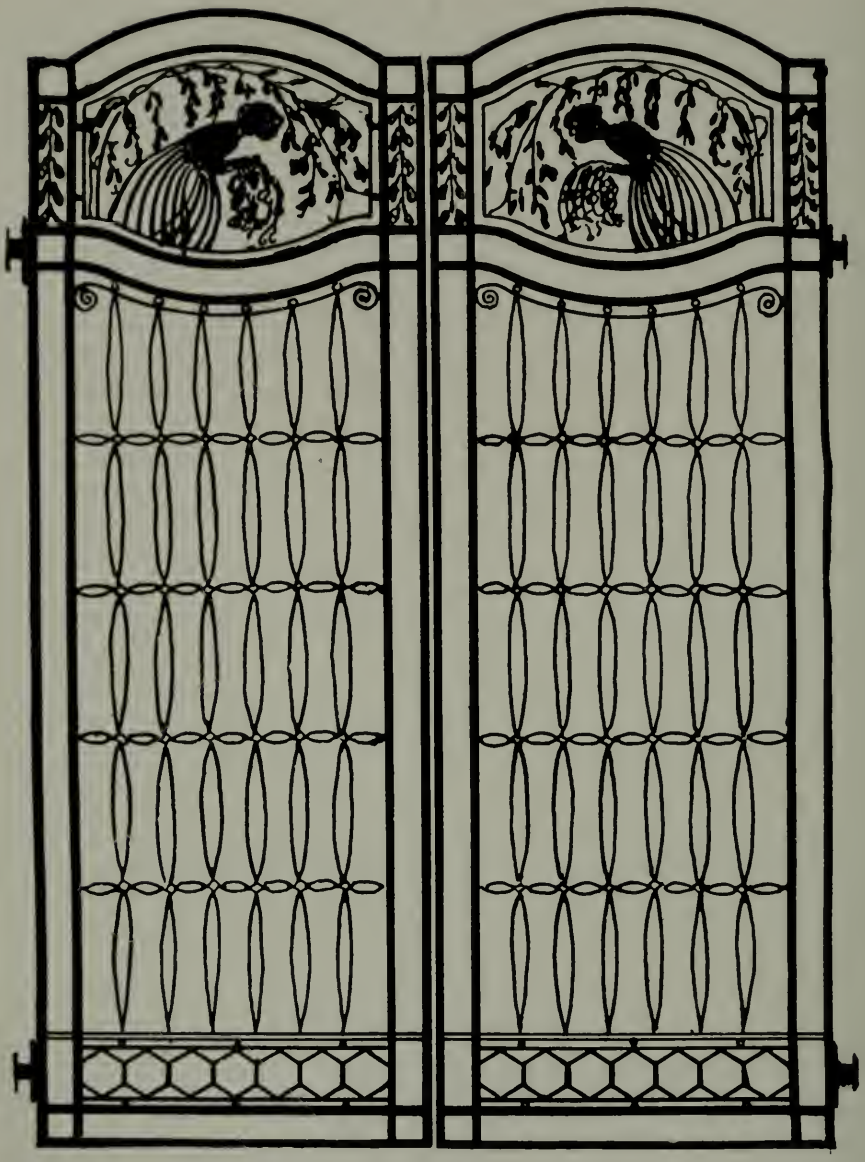
"There are considerable stretches of Fifth Avenue, for example, where the buildings are of moderate size, and their spacing and proportion to the width of the roadway are very near perfection. Many of them are of interesting and ingenious design, and the best have a fine severity which is a relief after the teasing ornament of so many European buildings. Nowhere else could one see so well what may be done with buildings of from twelve to fourteen stories, provided the roadway is in proportion to their height.

"I hope Mr. Topham Forrest will not confine himself to New York. Let him go at least to Washington, where there is the best modern classical architecture in all the world as well as an extremely interesting development of the domestic types. I spent two months in Washington not so long ago and found it an unending pleasure just to walk about the avenues and look at the new houses. The general character of them is Georgian, and everywhere one seems to see the influence of the brothers Adam, but there is something characteristically American and original in the result. There is no positively new architecture possible anywhere. All the dominant forms have been exhausted. But the opportunities for skill and originality in fitting buildings to sites, determining their proportions, harmonizing design to usefulness, and getting ornament out of design are inexhaustible and still make architecture a unique expression of character. American architecture at its best gives the sense of a character that is both refined and energetic. Also at times gravely emotional, as one sees on looking at the Lincoln Monument or the New Arlington War Memorial. All this one feels at Washington, and there a'so is one of the noblest works of art in the world, the incomparable statue of 'Grief,' by St. Gaudens, which must be forever one of the glories of American art."

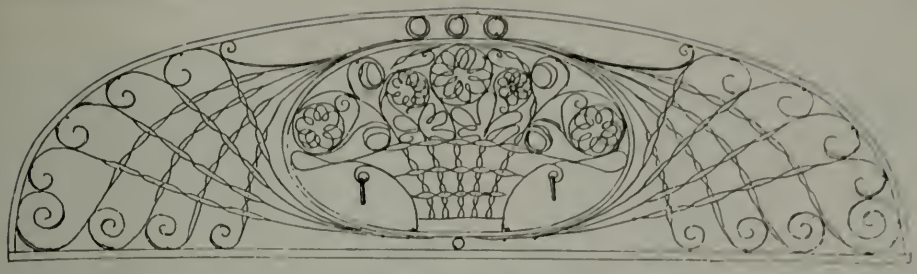
* * * *

Architectural Club Annual Jinks

The San Francisco Architectural Club will hold its Annual Christmas Hi-Jinks at Sorosis Hall, Saturday evening, December 13. A feature of the celebration will be a musical comedy written by a member of the Club and participated in by members.



ORNAMENTAL IRON DOORS
M. PIGUET, PARIS, DESIGNER



DESIGN FOR OVER DOOR BY M. SCHENCK

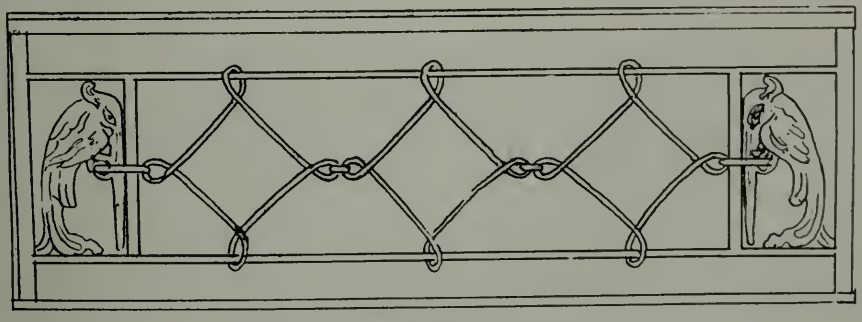
Some Notes on French Ironwork

By REDDICK H. BICKEL, Eleve de L'Ecole des Beaux Arts

THE rapid development of industrial processes in modern times has produced striking changes in all artistic fields with a resultant confusion bordering on anarchy, a condition that has done much to alienate the sympathy of a larger part of the art-loving public and cause an antipathetic attitude. There is, of course, a considerable volume of good work done and it is always a pleasure to come upon a meritable movement.

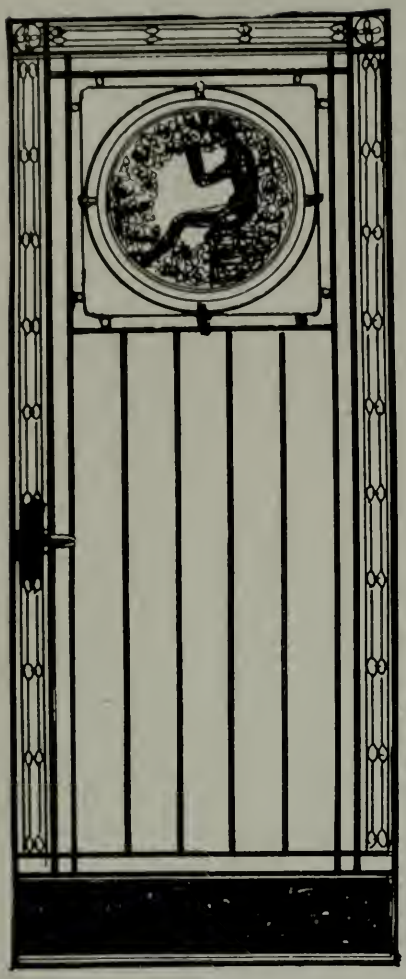
An art which has been for many years conservatively weighted with tradition and developing no rational tendencies is Ironwork. For hundreds of years the masters of this art have admitted no technique equal to that of the forge and hammer, and with justice, too, as there was nothing developed during the period to compete with it. Brazing was condemned by the Ironworkers Craft in the time of Louis XIV, and from then on down to our time the traditions of the Past have been respectfully cherished. How much more progress would have been made with a more liberal policy will never be known. Today we have developed the machine method and introduced the welding process—acetylene and electric—and the effect of these two is bound to infuse a new spirit and regenerate a graceful art. Back of this is the cost consideration and the time involved—two factors that count more in modern times than ever before. Artists appreciate these facts and we have, on the one hand, those who cling to the old traditions and, on the other, those who warmly espouse the new tendencies.

In the field of Ironwork the French have made interesting contributions recently, and in both design and technique they exhibit a more pleasing sympathy for the new spirit than any other group of artists. There is something very vital in their work, a vigor that still retains a sense of refinement—a quality so much modern art lacks—and a feeling of independence, rationally expressed. Archeological tendencies and the Art Nouveau phase of 1900 have been outgrown and I think the

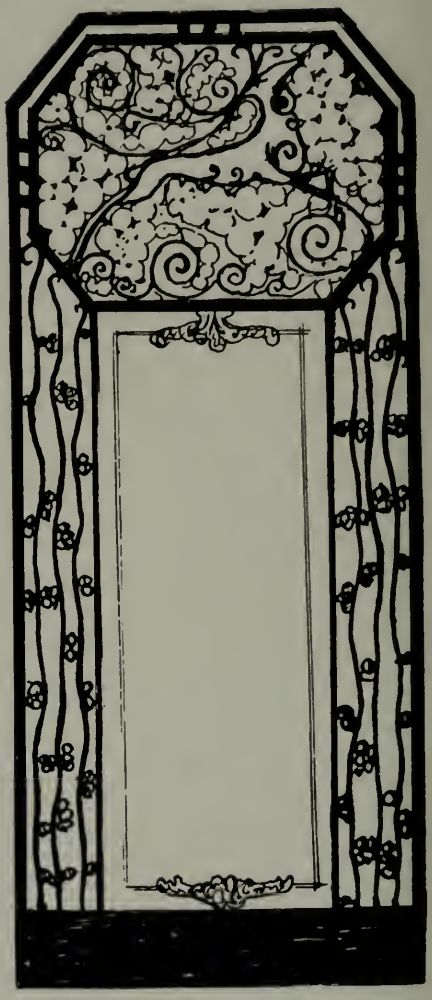


BALCONY GRILL BY M. SCHENCK

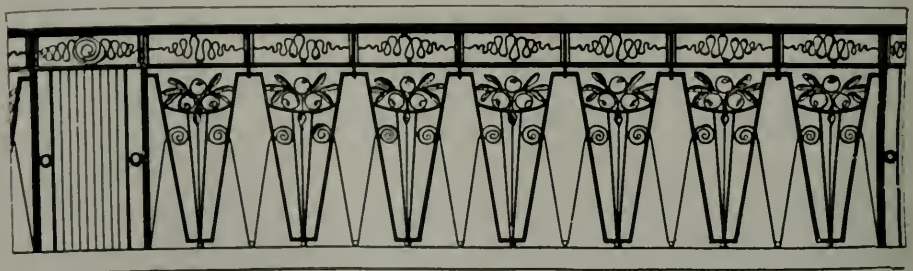
Doors



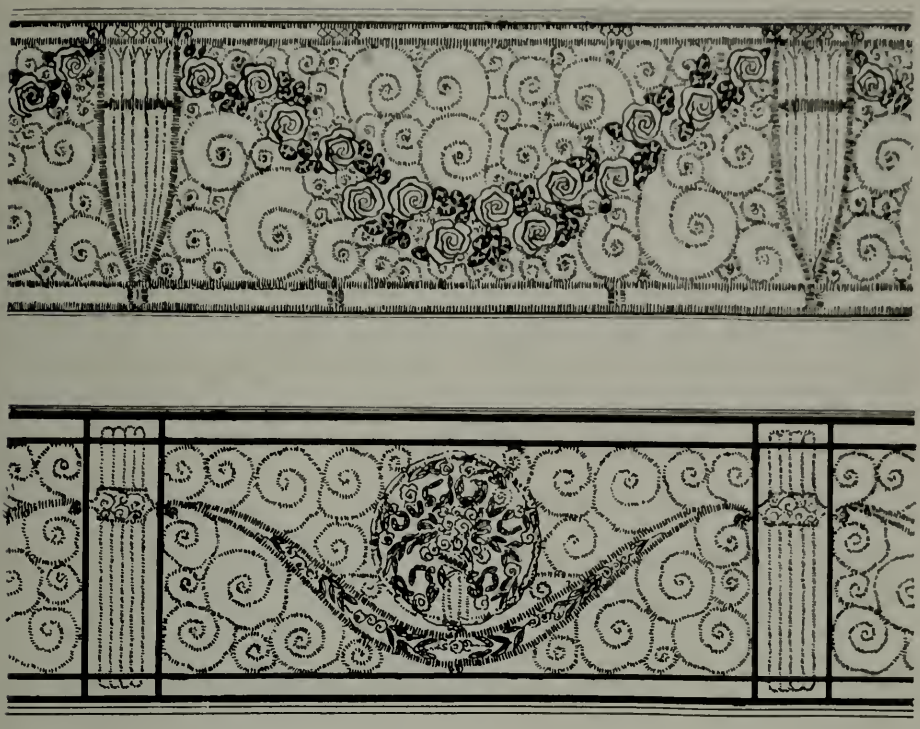
M. Piguet



M. Schenck.

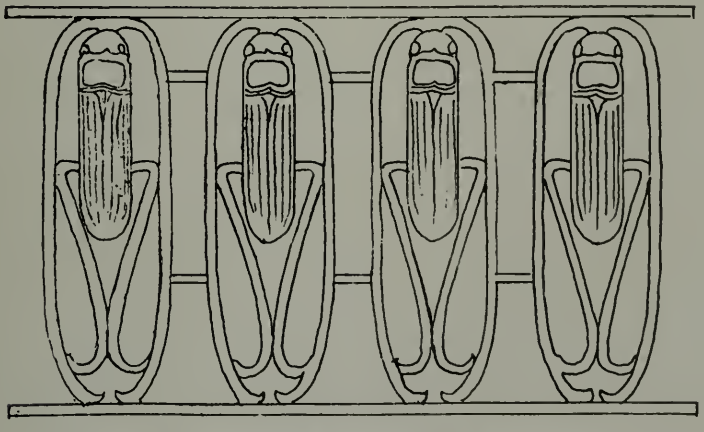


BALCONY BY M. SUBES



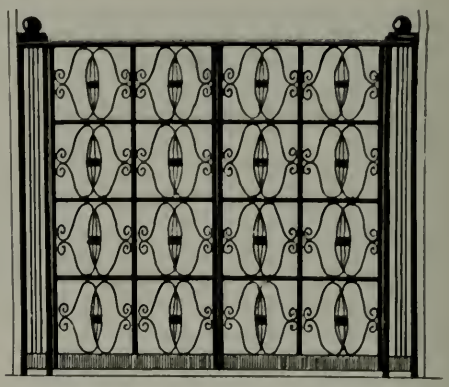
M. Brandt. Paris.

student who examines the field today will find much he can sympathize with. I have presented a few examples of Parisian craftsmanship that I think demonstrate the side that will be appreciated by most Americans.

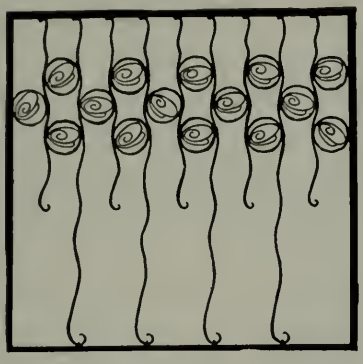


BALCONY GRILLES BY M. BRANDT AND M. SCHENCK

Balcony Grilles



M. Brandt.



M Schenck.

M Brandt

Radio a Problem for Architects

The development and rapidly growing popularity of radio broadcasting is compelling architects to provide adequate and proper receiving facilities in connection with building design. Favorable radio receiving conditions are declared to be an asset in a court case now on trial in one of the Wisconsin courts, where an owner is attempting to prevent the installation of high tension power lines within such proximity to his radio receiving set that he maintains would interfere with receiving conditions. So far as known, this is the first case of this kind to be tried in any American court.

One of the prominent Chicago broadcasting stations found some months ago that the erection of the new Temple Building was interfering with its output and upon careful observations being made, it was discovered that this particular building with its high steel tower has the same natural period as the meter wave of this particular broadcasting station and for that reason acts as an absorbing agency.

Hotel managers state that they have frequent calls for rooms with radio equipment and it is thought to be only a question of time when all up to date hostelries will offer their patrons individual radio "service."

Building to Resist Earthquakes

By W. H. THORPE, C. E., in Engineering, London

THE problem of building in earthquake countries has for years past received considerable attention, particularly in Japan, where much ability has been displayed in an endeavor to surmount the difficulties involved. The demand for buildings of magnitude compelled attention to the study and resulted in a statement of requirements with respect to such buildings, which have influenced design of the more recent structures. The precautions adopted appear to have been sufficient in the case of minor earthquakes, but in a very large measure ineffective in the terrible experience of a few months since.

In the case of steel-framed buildings an attempt has been made by force majeure to limit the destructive effects by proportioning the steel framing with large reserves of strength, particularly in the matter of what would commonly be called wind bracing, this being made to resist forces many times greater than that of the wind proper, and care being taken to ensure a true continuity in the make-up of the stanchions—even so, it was not expected that screen walls or partitions would be immune from damage.

Notwithstanding the more or less favorable accounts given with respect to the behavior of some of the more recent structures in steel, or in reinforced concrete, it is clear from the statements of unbiased eye-witnesses that not one of these escaped damage—generally srious, or with complete collapse. An entirely new treatment of the problem would seem to be necessary. This may be found in the fundamental principle that the building should be so supported as to be unaffected by horizontal earth movements, which may be secured by so supporting the structure that it does not of necessity move as the earth moves, to be achieved by suspending the building by tension rods from stable steel frames by suspension—in the case of light structures—from flexible steel uprights, or by support upon balls of cast-iron, steel, or granite.

The last-named method, though not new to the writer, has recently been proposed by Professor Bailey Willis, of Stanford University. Horizontal movement of the earth's surface would not then disturb the building which by virtue of its mass would remain still. The measurement of earth tremors is now, by some instruments, effected by application of the same law of inertia. A sound principle in structural design is that sudden displacements, involving the development of force, should either be adequately met by strength provided, or accepted by yielding that is harmless. The arrangement proposed would seem to meet the last-named condition in great measure, but the writer does not yet see any practicable method of dealing with the greatly less destructive vertical movement, in the Nino-Pwarl earthquake of 1891 a 9 inch horizontal range was observed, while at Tokio in 1894, though the range was but 3 inches, the rate of acceleration was 3 feet per second per second. Generally the range is quite small, and acceleration seldom greater than 2 inches per second per second.

Structures on Western lines are wholly unsuited to earthquake countries, as is demonstrated by the recent experiences in Tokio and Yokohama. From records available it would appear on the authority of an American technical journal that 7 inches of horizontal movement was experienced, though unofficial statements, probably from persons not used to precise observation, indicate movements greater than this. Clearly earthquake shock and disturbance may, in extreme cases, be

such that nothing will stand, but there is good reason to expect that if not much greater than that recently observed at Tokio, the conditions may be met.

Dealing with the first-named method, the problem of suspension of a building to yield the advantages aimed at becomes a question of structural design simply. If, for instance, an office building 160 feet by 80 feet by 60 feet high, having an internal well of 80 feet by 20 feet, were carried by a steel girder platform, not resting on the ground, but suspended at 12 points, each point of suspension would be required to take approximately 450 tons, that is to say, four suspension rods of 4 inch diameter, or 16 rods of 2 inch diameter at each such point, would carry the load at 9 tons per square inch. The upper ends of the suspension rods—say, 20 feet long—would be carried by wide based steel towers, generally, though not of necessity, housed within the building. The towers themselves would be well founded, and the only part of the structure required to move with earth movement. The weight of steel in the grillage platform and supporting towers would probably be more than one-half, but less than the total weight of steel in an ordinary framed building. The enhancement of total cost would be, perhaps 20 per cent as compared with that of an ordinary building to meet ordinary requirements, and no greater than for steel-framed buildings constructed of specially heavy steel work in a vain attempt to control the uncontrollable.

The second method named, by which a comparatively light building would be carried by attachment at the top to columns capable of a moderate size flexure without hurt, would have but limited application, while the third proposal, support upon balls, themselves resting upon a concrete base, would probably be best suited to reinforced concrete structures.

It is only in comparatively recent years that really heavy buildings have been attempted in Japan. Native modes of construction, based on age-long experience, have favored light and elastic framings, with enclosing screens, an intelligent appreciation of scientific fact, though perhaps not fully understood.

* * * *

Recognizing the Profession of Architecture

MOST firms manufacturing or selling building specialties or building supplies recognize the pre-eminent importance of the architectural profession. Perhaps there is no firm which in its advertising matter and in the conduct of its business has given a greater recognition to the architectural profession as such than has the American Radiator Company. In its advertising matter you will usually find the advice, "Consult your Architect."

When another great corporation dealing in building specialties, the H. W. Johns-Manville Company, was prepared to proceed with the construction of its New York office building at Forty-first and Madison Avenue, which was estimated to cost several millions of dollars, it invited twenty of the prominent architectural firms in New York to attend a banquet on January 4, 1923, as guests of the company.

At the banquet, the officials of the company stated frankly that they felt that their wonderful success in their particular field was due in a very large measure to the confidence and support of the architectural profession and that this fact was fully appreciated by the company. However, they did not feel able to discriminate between the vari-

ous architectural firms of the City of New York and in order to cause no bad feeling they proposed to select an architect for their new structure by lot, stating frankly that they were willing to entrust its building problem to any one of the firms who were the guests of the company.

This suggestion was accepted by the architects present and the building designed as the result of this selection is now completed.

In contrast to this proceeding, a corporation recognized as a prominent manufacturer of plumbing supplies in the Chicago territory, some months ago found it necessary to make certain additions to its Chicago plant and in this connection it absolutely ignored the architectural profession.

Quite recently another large manufacturer and jobber of plumbing supplies in Chicago found it desirable to plan for the construction of a large additional unit to their present plant and it is alleged that this firm has also ignored both the architectural and engineering professions and awarded a contract, not only for the construction but for the design of this unit, to a contracting firm which maintains a so-called "Designing Department."

What is the answer? There are many prominent members of the architectural profession who would be glad to debate the question "is architectural services worth while" with representatives of either or both of these firms and would leave the decision to any disinterested jury.

As a clean cut business proposition, the largest as well as the most successful manufacturers and dealers in building specialties have found that it is good business to employ architects. May we not therefore assume that if the two firms mentioned did not have the business acumen to have recognized the importance of professional services in connection with their own building problem that the architectural profession, as such, may assume that the same lack of business judgment and initiative may be found in the conduct of their own affairs and that the quality of goods and service supplied may be measured by the business judgment displayed in connection with their building problems? In order to secure the best goods and the best service, is it not probable that architects familiar with these facts will be disposed to specify the goods of firms who in the conduct of their own business have followed what is now recognized to be the correct method of procedure, and have always employed the best professional advice obtainable in connection with their problems?

It is indeed unfortunate that the architectural profession, as such, is not as well organized as the manufacturers of plumbing supplies. If it were, it would have impressed upon every manufacturer and dealer, the importance of the profession as such, and no manufacturer or dealer would ever presume to ignore the profession in connection with any of its building operations.—Monthly Bulletin, Illinois Society of Architects.

* * * *

Hotel Number In January

The Architect and Engineer for January, 1925, will be a Hotel Number, showing sixty pages of plates of some of California's most recently constructed hostelries, including the Biltmore, Los Angeles; Senator, Sacramento; Californian, Fresno; Huntington and Californian, San Francisco. Special articles on "Financing and Building Hotels", "Amusement Features", and "Modern Hotel Equipment", etc., will add interest to the number.

Low Pressure Heating Plants

Steel Boilers Advocated for California Weather Conditions

By IRA T. MARTIN*

THE impression seems to be rather general among the architects and heating engineers, as well as the laymen that in California where the climate is so much milder than in the Eastern states, little importance need be attached to the selection of the type or size of heating boiler to be used. This probably accounts for the fact that no recognized standards of comparison between the numerous types of heating boilers have been established for the guidance of the user and the trade as has been done in most of our principal Eastern cities.

With this condition existing California has become a fertile field for experimentation, both by the engineering profession and the manufacturer. A certain amount of experimenting is essential in any line of development but is only justified when the present knowledge of the subject has been exhausted; in other words, an engineer is never justified in recommending or specifying anything short of an installation that will accomplish satisfactory results.

Intelligent specifications must have for their foundation a thorough knowledge of conditions to be met. In the colder sections of the United States, standards have been adopted for the minimum heating equipment that may be installed in any building to meet the conditions of that particular locality.

So far as the writer knows, neither architects nor heating engineers have any recognized standards of requirements to be met in California. In general, the standards adopted in the principal Eastern cities can be used for California cities with certain factors incorporated to meet local requirements.

The principal factors are, the difference in the minimum outside temperature reached at any season of the year, the fuel to be used, the period for which heat is required and the type of building to be heated. The elements of these factors have been standardized and can be obtained from engineering hand books and the published data of many reliable concerns manufacturing equipment to meet varying conditions.

Low pressure steel heating boilers are by no means a new creation. They have been a standard for over thirty-five years and were designed to meet the most severe conditions. To indicate their capacities the manufacturers have reduced their data to the equivalent of direct cast iron radiation that each boiler will carry, exclusive of the normal piping required to supply this radiation and based on an outside temperature of 20 degrees below zero. Reliable manufacturers not only claim these capacities but guarantee them and so state on almost every page of their catalogues and data sheets, eliminating any uncertainty in specifying steel boilers.

While it is not uncommon in many places in the United States and Canada for the outside temperature to reach a much lower level, the reserve capacity in these boilers is sufficient to meet the situation for an indefinite period with nothing more than a possible slight drop in efficiency.

In Nevada and the colder sections of California it would seem unwise to deviate from the standards adopted by the manufacturers with the possible exception of the fuel to be used. In the principal cities of California the condition is quite different. The outside temperature seldom reaches 20 degrees above zero and with the inside temperature

*Engineering Service Department, Kewanee Boiler Company, San Francisco.

remaining the same we have a difference of 40 degrees or approximately 44.4 per cent less load from this source to contend with. For a basis of discussion we will say that in so far as outside temperature is concerned, the same type of building located in San Francisco or Los Angeles would require only 60 per cent of the heat that would be required in Chicago or New York.

With oil as fuel a steel heating boiler will carry 20 per cent more radiation than when coal or wood is used for fuel. This is principally due to the fact that the oil fire has a constant intensity and a maximum furnace temperature can be maintained. Practically all manufacturers of heating boilers have now taken this factor into consideration and their published data includes oil burning ratings. The foregoing factors are fairly well determined and are sufficiently accurate for all practical purposes.

The two last factors; namely, the period for which heat is required and the type of building to be heated come under the same practical head and are the most important and at the same time, the least recognized factor, involved.

In the colder climate it is the usual practice to provide for continuous heat in living quarters during the colder season of the year but for buildings that do not come under this class the following factors are in general use. For buildings heated through the day and closed at night, add 15 per cent, for buildings heated through the day and open at night, add 30 per cent, and for buildings heated only intermittently for special occasions, add 50 per cent.

In this milder climate the conditions are quite the reverse, the usual practice being to allow almost all buildings to cool down during the night. This brings practically every California installation under one of the conditions above recited, for part time heating. Thus, we see that our ability to reduce the capacity of heating equipment in this climate by 40 per cent due to the difference in outside temperature is almost, if not quite off set by the 30 per cent to 50 per cent which must be added to off set the fact that our buildings are heated only intermittently. This applies both to boiler capacities and distributing systems.

The heating of a building presents two distinct problems; that of generating the required amount of heat and the distribution of this heat throughout the building. An investigation will show that in California buildings where the heating is the most satisfactory and efficient, the distributing system in the building does not vary greatly from the standard Eastern installations.

The 20 per cent reduction to off set the difference in fuel used, applies only to the boilers or generating plant and as stated before, this item has been taken care of, in most instances, by the various boiler manufacturers in their data showing the capacities of the various size boilers.

With the distributing system practically the same as for Eastern conditions, the boilers are selected to carry this load. Take for example, an auditorium or school building. The load on the boiler is a peak load. The actual time required to bring the building up to the desired temperature under forced fire is determined and the boiler is expected to repeat this performance each time the building is heated. This means that the boiler must be of ample size to supply this maximum demand on the peak load or be capable of operating efficiently under a severe overload during the period the load is at the peak.

This peak load occurs but once each day and if conditions are favorable lasts not more than two hours, after which the load gradually

returns to normal and then drops rapidly until, in the warmer parts of the day, it is the exception if heat is required at all. If this peak demand occurs in 185 days out of the 365 and the duration is two hours we have this load on 370 hours out of a possible 8760 hours, or a little over 4 per cent of the time.

Three solutions to the problem present themselves; either flatter yourself that you live in California and put up with the cold; select a boiler the normal capacity of which will take care of this peak load; or select a boiler the normal capacity of which will most efficiently carry the load 96 per cent of the time and at the same time be capable of developing a sufficient overload to carry the peak load 4 per cent of the time with no appreciable change in operating conditions, except a slight rise in stack temperature which results only in a slight lowering in efficiency through a portion of the time the peak load is on. A conservatively rated steel boiler should operate at maximum efficiency between the limits of 20 per cent under load and 20 per cent overload.

The relative merits of wet and dry steam have long been recognized in the use of steam for power. Recent developments have proven conclusively that the moisture content is equally as important a factor in efficient steam heating. This, in itself, is a subject worthy of discussion and as the special merits of dry steam for heating is now generally accepted we will treat it as a recognized factor in an efficient steam heating boiler.

To generate dry steam commercially four factors are absolutely essential. Ample combustion space in fire box, ample heating surface, free circulation within the boiler and disengaging area sufficient to allow the steam to be freely liberated from the water before leaving the boiler.

It is possible to balance all of these factors in such a manner that regardless of the demand upon the boiler up to the capacity of the combustion chamber the moisture content in the steam leaving the boiler will remain constant.

In the earlier development of steam heating, boilers made of cast iron and cast in small unit sections were resorted to primarily on account of the cheapness of that material at the time and on account of convenience in handling and economy of space required by the boiler. These features were obtained, however, at the expense of steam space, disengaging area and freedom of circulation, the result being an abnormal moisture content requiring an external equalizing pipe, the function of which was to return a portion of the entrained moisture in the steam back to the boiler before it entered the distributing system proper.

No type of boiler has stood the test and been more universally used than the standard steel firebox boiler, in fact they have pioneered the field in almost every industry and are today more universally used than any other type of boiler, notwithstanding the hundreds of different designs that have been exploited. Why? First of all they do the one essential thing, **deliver dry steam at the nozzle** under all normal conditions and up to the capacity of the combustion space; in other words, they are of **perfectly balanced proportions.**

With these perfectly balanced proportions determined by the most severe actual tests such as railroad service in high pressure work and steam heating in low pressure work, these boilers are built to definite proportions and must be used in the manner intended by the designer. Under these conditions the manufacturer can (and does) guarantee their performance wherever the installation conforms to usual practice.

We must admit that there are cases where physical conditions will not permit of the installation of a boiler of standard design but in all such cases we are necessarily limited to the minimum factor of the boiler substituted, or, in other words, its weakest point.

Commercial aspirations have brought into existence so many types of heating boilers designed to meet abnormal conditions and their special abnormal feature so emphasized to the architectural profession that it is not uncommon to find architects, consciously or unconsciously creating abnormal conditions even in new buildings which limit them to the use of such equipment.

As has been stated before, in no section of the country is the advisability of using the best in heating boilers more pronounced than in California owing to the fact that during 4 per cent of the time these boilers are driven to maximum capacity and this time represents a portion of each day during the heating season.

The safety factor in low pressure heating boilers is just as important as in power boilers, if not more so, and realizing this fact, the more conservative manufacturers of standard steel firebox heating boilers have never seen fit to deviate from the structural designs of high pressure boilers. The physical properties of boiler plate steel are so far standardized as to reduce to a minimum any hazard in connection with its use. This, coupled with riveted construction which makes it possible to mathematically calculate the actual strength of any joint, puts the steel firebox heating boiler in first place, not only as to its properly balanced proportions, but as to its structural design as well. Both for low and high pressure heating, the same general design is carried out in the boilers for 15 pounds and 100 pounds working pressure.

In fact, standard steel firebox heating boilers with riveted construction classed under the A. S. M. E. ruling in the United States as low pressure boilers and to be operated under 15 pounds working pressure are also standard in Canada under the Interprovincial Code for 30 pounds working pressure. Insurance companies who base their risks on actual strength and standard safety factors accept and will insure these same boilers for from 30 to 50 pounds working pressure with no change in standard design.

Architects and engineers some times express confusion in specifying low pressure heating boilers. We believe this confusion arises from a desire to satisfy commercial conditions rather than from an engineering standpoint. Nothing can be more definitely standardized than the standard firebox steel heating boiler with riveted construction. The manufacturers' data has been reduced to a simple knowledge of the requirements for steam. If a specification calls for a standardized article such as we have described, or **equal**, the selection then becomes only a matter of logical comparison of the weakest point in the proposed substitution to that of the standard specified.

In practically all of our California building programs the item of first cost is an important factor but, build as elaborately or as modestly as you will, if the roof leaks and the heating plant is inadequate there can be no satisfaction.

Real engineering consists of securing satisfactory results at minimum cost and in so far as low pressure heating is concerned, this, in the writer's judgment, can best be accomplished, especially in California, by the use of standard firebox steel heating boilers in conjunction with an adequate distributing system.

HOUSE DESIGNED AND BUILT BY FOWLER MALLETT

Chimney belongs to fireplace illustrated on opposite page. Note how stack has been carried up above ridge of surrounding roofs. Base is stuccoed directly on outside of concrete fireplace, hence the hexagonal form.

FOUR-FOOT FIREPLACE OF SIMPLE DESIGN
This house was illustrated in The Architect and Engineer for April, 1924

Detail and Rules of Fireplace Construction

By FOWLER MALLETT

Few architects and builders have been so fortunate as not to have had their troubles with fireplace construction. Recently a Correspondent wrote to the editor of this magazine: "Can you give detail and rules for proportioning a flue throat for a large fireplace with opening 5 feet by 5 feet or so?" Mr. Fowler Mallett, an architect of Berkeley, California, was asked to supply the answer to the query, he having made a study of this type of construction and experienced splendid results with his designs. The rules as given by him in the following article are unquestionably authentic and dependable, having been thoroughly proven by use for some hundred and twenty years. The writer points out that chimney construction in general use today among masons is faulty in the extreme; a condition, he says, due largely to a misunderstanding of the principles. The fireplace properly designed and constructed, Mr. Mallett says, is one of our most effective methods of heating, and he believes architects would do well to go into the subject more thoroughly.

THERE are two ways of handling a fireplace with an opening "5 feet by 5 feet or so", depending on the purpose of the fireplace and the type of fuel to be used. In most modern instances the fuel would be 2-foot wood, and in all but the very largest interiors a fire of 2-foot logs in a correctly designed fireplace would throw out all the heat which could be tolerated. It is because the proper construction is so little known that the fireplace has all but lost its reputation as a means of heating. Most fireplaces are, in fact, so incorrectly designed that they are seldom more than an ornamental adjunct to the modern room, with a reputation for giving off more smoke than heat. Yet the rules are very simple—are in fact a mere common sense application of the principles of convection, worked out years ago by Benjamin Thompson, Count Rumford, a contemporary of Benjamin Franklin who remodeled several hundred fireplaces in English palaces and manors with one hundred per cent success.

Where 2-foot wood is to be burned, the proper procedure is to build a facing-within-the-facing of your fireplace, reducing the opening to say 3′ 6″ wide by 2′ 6″ to 3′ 0″ high. This can be done without destroying the sense of spaciousness of your 5-foot fireplace by treating it as a recess within the recess, which is the usual practice where mantels of characteristic Renaissance type are employed, the larger opening constituting the decorative fireplace, and the smaller one within it set well back and being the real heat producer. But as the principles involved would be the same as in the larger fireplace with practically all dimensions proportionately reduced, we will assume the colossal interior and a 5-foot fireplace for 3-foot wood and give the rules pertaining thereto.

Reference to the first three diagrams will make the construction clear. But to begin with, a word or two anent the chimney itself. The flue must be 1/12 to 1/10 the size of the fireplace opening. No arrangement of dampers, hoods, or chimney tops will make a fireplace draw under all conditions if the flue is too small. In fact, accessories of this kind are not only unnecessary but an actual impediment to a properly built fireplace, which never requires any mechanical devices of this sort. Thus a fireplace with an opening 5 feet by 5 feet requires a square or rectangular flue of about 360 square inches (say 17 by 21 inches), or a round flue of about 300 square inches (say 20-inch diameter). Owing to the spiral motion of ascending smoke the circular flue 1/12 of the fireplace opening is as effectual as the rectangular flue of 1/10th.

Secondly, the top of the chimney must clear all surrounding obstacles which might tend to produce a down draft in certain directions of the wind. If located away from the ridge of a sloping roof it must be carried at least a foot or two above the highest point of the roof. If on a low building adjoining a higher one or a dense growth of tall trees, it must be carried to a similar height above these obstructions.

So much for externals. Now as to the fireplace itself, the width of the back will be determined by the length of wood to be burned—in this case 3 feet. But in general the back should be enough narrower than the front for the jambs to form angles of 45 to 60 degrees with it. Heat is reflected in the same manner as light, and the more the sides slope the more heat will be given off. With jambs at right angles to the back the heat is reflected back and forth within the fireplace and ultimately lost up the chimney.

The depth should normally approximate one-half the width of the opening, with a minimum for small fireplaces of 17 inches. If deeper than this, heat is lost which ought to be reflected into the room; if shallower, the burning fuel would be likely to project beyond the face of the fireplace and smoke. The fire must, of course, be all within the actual fireplace, but for all depth in excess of that above stated there is a more or less proportionate loss of heat.

A square opening such as we are considering is neither structurally nor esthetically desirable as a general thing. An opening 5 feet wide would normally be much lower, and if there is any way of doing so gracefully it should be kept down to say 3′ 6″ or thereabouts. This can sometimes be determined by applying the shape of the room as a basis for proportioning the fireplace opening. Thus if the ratio of width to length of the room were 6:10 the fireplace opening might be made 3 feet high, with a gain in most instances through artistic repetition of the ratio. This would reduce the size of flue required to about 12 by 18 inches, or 16 inches diameter—a distinct saving in chimney cost.

For a 5-foot opening 3′ or 3′ 6″ high the depth, in accordance with

the rule given above, would be about 2′ 6″. But for every foot of increase in the height of the opening it is advisable to increase the depth 4 inches to prevent smoking, with, of course, a consequent reduction in heat given off for each extra inch of depth. Our fireplace 5 feet by 5 feet will therefore have to be 6 inches deeper, or 3 feet from the facing to the fireback. Where the design of a mantel requires an opening taller still, as in some Renaissance mantels where no inner facing is used, the depth must be increased still further in the same proportion.

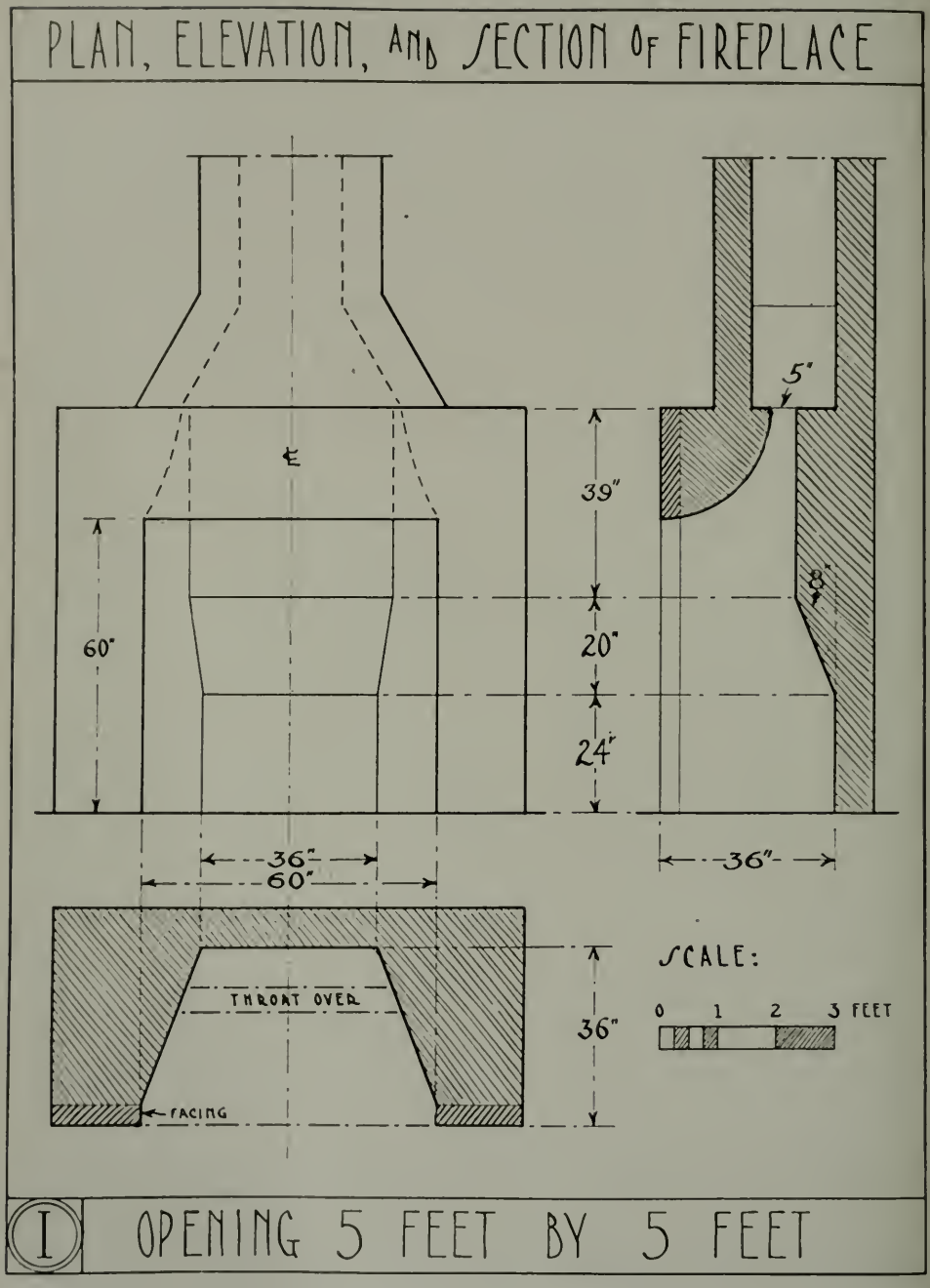
The lower edge of the chimney breast, forming the arch or lintel of the opening, should be formed to a quarter circle. The convex surface offers the necessary gentle coaxing to lead the smoke into the throat. A flat surface at this point impedes the smoke, some of which hitting here will rebound into the room. A plain sloping surface accelerates the draft and causes heat loss up the chimney. Under no circumstances should a concave surface occur at this point as it causes the smoke to curl back on itself and stagnate, divide, and in part enter the room. If the breast is of brick, the back end of the bricks can be chipped to the necessary radius and the arch bars so set as not to destroy the continuity of the curve. But a cast lintel of concrete with a few reinforcing bars is the simplest way of handling this point.

The fireback is the place, however, where most fatal errors are committed. Nothing could be worse from either the standpoint of proper draft or of heat reflection than the usual—almost universal—concave sloping back. With a 5-foot opening the back should rise vertically for about 24 inches, should then slope forward a matter of 8 inches in a height of about 20 inches, from which point it must rise vertically to the throat. The sloping surface thus occurs at the point where the blaze plays upon it and serves to reflect the heat into the room. Above, where the blaze gives way to smoke, the vertical surface offers no obstruction to its upward progress.

The back must continue to rise vertically to a point where the chimney breast quadrant terminates in the vertical rise of the flue, and the flue must be so set that a throat will be formed not over 5 inches wide. In smaller fireplaces it may be reduced to 3½ inches, and in a 3- or 4-foot fireplace it may be 4 inches, but no matter what the size of the fireplace, the throat must be kept narrow, as this is primarily the secret of constant draft. The throat must extend the full width of the fireplace and will thus have an area of cross section just slightly under the flue area.

Behind the throat the smoke shelf must be flat to prevent down drafts in unfavorable wind, never sloped toward the throat as is often done. When sloped it invites gusts of smoke and soot into the room. This shelf will extend the full length of the throat, considerably more than the lateral dimension of the flue itself, which in this case is 21 inches. A smoke chamber is thus formed to collect the smoke from all parts of the fireplace for its ascent up the flue.

The smoke chamber should have its sides drawn in gradually, at an angle of about 60 degrees, until the size of the flue is reached. It must be symetrically formed over the center of the fireplace, never carried over to one side or there will be puffs of smoke at the opposite side whenever a door or window is opened. After being drawn to the flue size directly over the center of the throat, the real flue begins, and this can be carried over to one side or twisted around AD LIB. as the design of the chimney may require. But it is never advisable to make any changes in direction at a less slope than necessary and under no circum-


PLAN, ELEVATION, AND SECTION OF FIREPLACE
℄
60"
39"
20"
24"
5"
8"
36"
60"
36"
THROAT OVER
FACING
36"
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0 1 2 3 FEET
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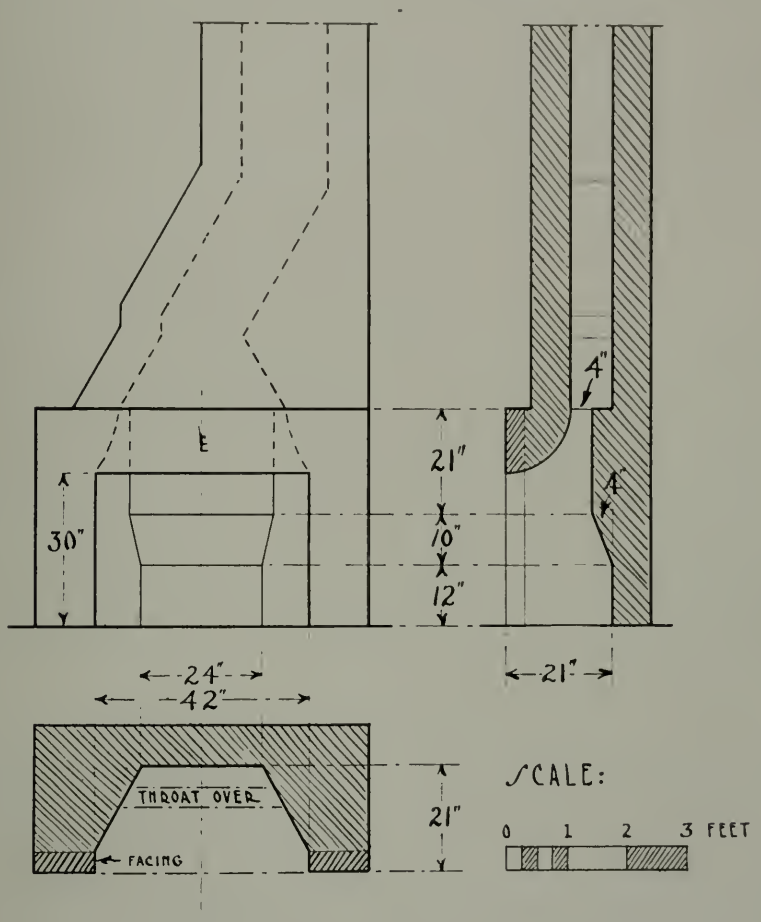
OPENING 5 FEET BY 5 FEET

PLAN, ELEVATION, AND SECTION OF FIREPLACE



II OPENING 3½ FEET BY 2½ FEET

stances at an angle of less than 45 degrees. It goes without saying that the flue size must be kept constant throughout all bends, and the fewer the convolutions the better. All portions of the flue and smoke chamber should be kept smooth and free from irregularities which would tend to retard the smoke.

Reference to the second set of diagrams will show the size and proportions of an ideal fireplace for a room about 20 by 30 feet, to burn 2-foot wood—such a fireplace, in fact, as might be built within our 5-foot opening to accommodate it to a room of this size. The diagrams should be clear from the foregoing explanation. I have used fireplaces of this form continuously in my practice for fifteen years, only varying the size to fit the room and the fuel intended, and have never had a failure in any kind of surroundings or any kind of weather. The only complaint I have ever had was that with a good fire in one, it throws out so much heat you have to open all the doors and windows to stay in the room with it! And it uses far less fuel than any other type of fireplace because the draft, while adequate to carry off all smoke, is gentle and does not waste heat up the chimney.

You have to take a club to the mason to get him to follow the details without injecting rules-of-thumb of his own, but the result is worth the effort. I have found it much simpler to build a set of standard forms for sizes in frequent use and to cast the entire rough fireplace and smoke chamber in reinforced concrete, setting the firebrick lining into the forms (in fire clay) before pouring the cement. It is a great satisfaction to turn the building over to the client with the fireplace unblackened from "test fires" and to reserve sacred to the client himself the kindling of the first fire. It is the symbol of the true housewarming. And it cannot fail, for it is absolutely and scientifically correct. Other fireplaces may draw under favorable conditions. Doubtless in the doctrine of chances one builds a fireplace now and then which draws perfectly under all conditions, but it cannot be thoroughly efficient. This construction removes all elements of speculation under any set of conditions.*

* * * *

Brick Building Competition

A series of Brick Building Competitions has been approved by the Portland and Washington State Chapters, A. I. A. The prizes are offered by the Pacific Northwest Brick Manufacturers' Association. The first problem will be a one-story brick office building. Designs must be submitted by December 1. A second competition will be held early in the spring. Programs may be obtained by addressing the Secretary of the Brick Competition, 511 Thompson Building, Seattle, Wash.

The competition is open to architects, architectural draftsmen and students residing in the States of Washington and Oregon and the following counties in the State of Idaho: Boundary, Benewah, Bonner, Kootenai, Shoshone, Latah, Nez Perce, Lewis and Clearwater, these counties in Idaho being included in the territory of the Washington State Chapter.

*For a fuller appreciation of these principles see an account of the eventful and fascinating life of Benjamin Thompson of Woburn, Massachusetts, afterward knighted in England in recognition of his scientific attainments, and appointed Count Rumford by the King of Bavaria for services rendered that kingdom. Also the paraphrase of and comments on his essay on fireplaces by G. Curtis Gillespie, C.E., published some years ago by Comstock—now out of print, but available at libraries.

New Code for Structural Steel Industry

DURING the thirty-five years that have elapsed since structural steel was introduced, there has developed an industry engaged in the fabrication and erection of this material which is now furnishing more than $300,000,000 worth of products to the public annually. The development of this enormous industry has brought into existence many inconsistent practices and definitions.

To clear up this confusion, and eliminate the various sources of dispute, the American Institute of Steel Construction, representing the industry between the rolling mills and the buying public, has undertaken the codifying of the various trade practices, with a view of establishing uniform procedure.

An instance of one of the many fruitful sources of misunderstanding between buyer and seller is furnished by the classification of the various iron and steel items entering into a structure. In the past there has existed a great deal of confusion as to just what constitutes structural steel and iron. The Institute's Code of Standard Practice has divided the steel entering into a structure into the following classes:

Class "A"—Structural Steel and Iron
Class "B"—Ornamental Steel and Iron
Class "C"—Steel Floor Joists
Class "D"—Miscellaneous Steel and Iron

Under these four classifications the various items are enumerated in sufficient detail to eliminate any possibility of doubt as to the material to be delivered under contract.

This classification is typical of the thoroughness of the manner in which the code has been developed. A committee of the Institute worked for a year on the codification of the best engineering practice. When the first draft was completed, it was sent out broadcast to engineers, architects, contractors, technical publications and others interested, with a request for criticism and suggestions. More than 150 letters were received, all of which were carefully analyzed, and the first draft of the code revised to embody those which developed to be pertinent. This revised draft was reviewed by a committee of eight engineers, who also made certain revisions and suggestions. The resulting draft was in turn distributed, much in the same manner as the committee's first copy, and the document was finally reviewed by the board of directors of the Institute. The last step was to have the code studied from a legal standpoint by two prominent attorneys. The result of this painstaking effort has been described by prominent engineers and technical experts as the most accurate code of practice ever developed for any industry.

Throughout the code every possible effort has been made to safeguard the interests of the buyer equally with those of the seller. The result is a code which defines in unmistakable terms the rights of all parties concerned, with a resulting economy to the user and producer of structural steel in its various forms.

The report clears up definitely the basis of invoice weights. It defines what constitutes a plumb building, something which has never been done before. On the question of delays, rigid requirements have been set up which tie the hands of the seller equally with those of the buyer in every detail, and making the question of compensation and adjustments for such delays simple, definite, and free from obscurity or the countless loopholes that have been the source of so much annoyance to the industry and the users of structural steel.

In connection with the code, the Institute has worked out a standard form of proposal, under which the seller agrees to furnish to the buyer certain materials and labor, "in accordance with the conditions of the Code of Standard Practice of the American Institute of Steel Construction". Execution of this proposal by buyer and seller is all that is necessary to make the code operative on any contract.

* * * *

Regulation Mail Boxes for New Apartments

REGULATIONS for mail boxes in all new apartment houses, flats and family hotels containing three or more families, have been prescribed by Postmaster General Harry S. New as the result of many thefts of mail coming to the attention of the department. These regulations contained in general order No. 9596, provide that receptacles for mail "shall be arranged in groups of such numbers as may be practicable, each group to be equipped with a master door, on the opening of which the entire group of receptacles is accessible for the deposit of mail by carrier. In the master door there shall be secured by a lock furnished by the postoffice department for use so long as mail is delivered by letter carriers, the key of which lock shall be in the custody of postal employees. The doors to the several receptacles shall be secured by satisfactory locks, with a sufficient number of key changes to prevent the opening of other receptacles by the use of the key of any receptacle. The receptacles when closed shall be without slot or other opening.

"The several receptacles shall be identified by a number and shall have affixed to the interior, where it can be easily read by the carrier when the master door is open, a list of the names of the persons receiving mail through such receptacles.

"In determining the size of the receptacle, consideration should be given to its being of sufficient capacity to receive long letter mail as well as certain magazines which are approximately 18 inches in length, but in any event they should be of such size as to receive mail matter approximately 12 inches in length.

"That the receptacles shall be constructed of such material, of such strength and thickness, and in such substantial and durable manner as to render the mail deposited therein reasonably safe.

"Persons proposing to construct, manufacture, or supply receptacles under these regulations shall submit a description, accompanied by model or drawings, to the postoffice department for approval."

This order has been supplemented with instructions to postmasters by First Assistant Postmaster General John H. Bartlett which contains the following:

"While the order does not apply to apartment houses where the boxes are already in, it is the earnest recommendation of the department that apartment-house owners should install some safe and sizeable set of boxes having the master-key equipment.

"The department favors no particular make of apartment-house boxes. It is only interested in having them large enough to hold mail that naturally comes to them and strong enough to prevent depredations. The other leading feature of this arrangement is that the carrier may have a master key by which he, and he alone, can have access to the boxes as a whole or in groups, and that the individual owner of a box, namely, each dweller in the apartment house, may have a key to his individual box, and the only key to his box, precisely in the same manner as a patron has a box in a postoffice and the only key to that box."

Floors of Character

By W. L. CLAFFEY, Secretary Oak Flooring Bureau, Chicago

WE must go further back than the records of authentic history to visualize the part oak has played in the story of mankind. As an article of utility and of beauty, its use is interwoven into man's checkered progress from barbarism to the highly efficient and intricate civilization of today.

Oak is king of the forest, and of all oaks that grow in various parts of the world, the leading American varieties are considered the highest type. Botanically speaking, there are perhaps close to one hundred varieties; but commercially and practically there are two—white oak and red, both wide-spread throughout the country, east of the Rockies. Of the two, white oak is superior and its tough, strong, hard fibre is susceptible to high polish. Red oak is coarser grained, has the faster growth, and may be identified in the tree from the fact that its leaves have pointed lobes, while those of all other species are invariably rounded. White oak is strictly an American wood, growing only in the United States and Canada, and is the only hardwood of the highest quality growing in abundance in the known world. The importance of oak as flooring material is beyond computation, and a well-laid oak floor in the home should be regarded as an heirloom, and valued as such.

Practically speaking, oak flooring has brought about the emancipation of the American housewife from "floor-drudgery." Perhaps no other single improvement in home building has been such a blessing. The old-fashioned carpeted floor was until recent years all but universal in the average home. And what a back-breaking and unsatisfactory task housecleaning used to be:—prying out the tacks, dragging out the dusty germ-laden carpet, beating at best only half the dirt out of it; then back into the house, stretching, and fitting. Then daily sweeping to keep things apparently sweet and clean. Now, with oak floors, requiring but a minimum of effort, always fresh and bright, allowing no accumulation of dirt, the rooms are easily kept clean and sanitary.

A special thickness of oak, called ⅜-inch, is made to lay over the old flooring, which is used as a sub-floor, making it possible for every home to have modern oak floors, at very little trouble and expense. The old floor is scraped level, if necessary, and the oak flooring strips laid at an angle to the boards of the old floor. No interior woodwork need be disturbed, except the quarter-round, and the entire house may be floored, one room at a time, with little disturbance to the household. Carpenters are finding profitable work during slack times laying ⅜-inch oak over old floors. The appearance of the finished floor, and the wearing qualities are as great, as if oak had been laid when the house was built. In laying ⅜-inch flooring four simple steps are recommended: scraping, if needed; laying out the strips; laying the new floor; and finishing, after a filler has been applied. The cost is surprisingly low, not more than to re-carpet, and less than many single pieces of furniture in every-day use.

With reasonable care, oak flooring will last indefinitely, adding greatly to the value of the home, as no one today will buy a home without oak floors. Oak floors laid half a century and more ago are in good condition today. Oak floors laid in railway stations, factories, schools and subject to heavy wear, are after decades of use, giving full satisfactory service. Architects and builders recognize the economy of specifying oak for "heavy-duty" floors.

The present widespread and satisfactory use of oak floors is due to perfection in manufacture. From kiln-drying the lumber to final grading, every step is checked by trained men, who have made laboratory tests, and know how to make flooring that will reach the job in perfect condition, and will stay in place when laid, though much depends upon the care taken of flooring at all stages up to the actual laying.

* * * *

When Checking Fails to Protect Design

HOW would you feel if, as chief engineer or consultant on an important piece of work, the design of which had been made and checked with all usual and reasonable care, you were suddenly confronted with a serious structural failure traceable directly to an error in design? To what extent should you hold yourself to blame? What judgment should you pass on a brother engineer who meets a like misfortune?

A recent California occurrence revives these questions which are as old as the profession. On June 24 a partial failure occurred in the wall between the grit basin and sedimentation basin No. 3 of the filter plant at Sacramento. The break, about 80 feet in length, occurred during the dewatering of the grit basin for the purpose of cleaning out the deposit of mud therein, and when sedimentation basin No. 3 was full of water and functioning in the regular operation of the plant. The total length of the party wall is 191 feet. A rough preliminary estimate set $20,000 as the cost of repairs necessary to the wall itself and to other parts of the filter damaged by the outrushing water.

The inadequacy of the wall to support the pressure from one side when the opposite chamber was drained was readily apparent in the plans from which the structure was built. The construction was in strict accordance with these plans.

A discrepancy between the original design and the tracing was revealed as the source of the error, which, by a peculiar slip, escaped detection by at least five competent engineers through whose hands it subsequently passed. Fortunately the working drawings, notes and data, as well as final plans of the job, had been kept in the city's files. These were examined as soon as possible after the accident by the resident engineer and the chief consulting engineer, both men of high professional standing, and a report was rendered which includes the following:

"The design sheet, dated February 24, 1921, shows that the wall in question was designed to take loads from either direction, i. e., either basin being full and the other empty.

"The detail of this wall as shown on contract drawing, sheet 60, is not in accordance with the design as prepared on February 24, 1921.

"The wall as detailed on sheet 60 is not of sufficient strength to resist the pressure due to the full operating depth of sedimentation basin No. 3 and the grit basin empty. It is, however, amply able to resist all pressure due to the dewatering of sedimentation basin No. 3 with the grit basin full.

"All of the designs and drawings for this work were made by the filtration division under the personal direction of the writers. The contract drawings were signed by us and, as required by the contract stipulations, were also signed by the mayor and city engineer. Neither of these officials had an opportunity to review the designs in detail and neither one is responsible in any way for the failure.

"We are completely at a loss to explain the reason for the fact that the wall was designed correctly and then detailed incorrectly. The drawing, however, passed the inspection and scrutiny of at least five or six capable persons without discovering the discrepancy."

We have here a case of human fallibility with which it is impossible always to reckon. One might think that "the inspection and scrutiny of five or six capable persons" would afford complete protection; but here and in other cases is evidence that the protection is only approximate. The Quebec bridge disaster of 1907 with its great loss of life was in this class. If five men can miss a vital error so can ten—only less often.

Obviously there is a practical limit to the amount of checking that can be done on any design, just as there is a limit to factors of safety in strength, even though failures of material still sometimes occur. In fact, the "factor of safety," the checking of design, and the inspection of materials and construction have the common primary function of guarding the structure from defects which ideally ought not to occur, but which experience teaches are always possible.

The profession of necessity judges its members on the basis of established practice, but there come times when practice should, and must, be changed. In the long run each engineer's own conscience must answer for him the questions of whether or not he deserves the reliance which the public, of necessity, places in him and his work; and if he has had a failure, whether or not he has, by carelessness or haste, wronged those dependent on his ability.—Engineering and Contracting.

DINING ROOM, HOUSE OF MRS. ROY CARUTHERS
Morris H. Whitehouse, Architect
Other pictures of this house are shown on pages 61 to 65.

Street Planning and Research

By CAROL ARONOVICI, City Planning Consultant

Frequency and Geometric Relations of Highways

IT IS generally conceded that about one-third of the area of any developed community is devoted to street uses. This means a very considerable sacrifice of valuable land and a constantly increasing cost of development and maintenance.

A general examination of the maps of the various cities of this country will show that although we have in a general way accepted the grid-iron system of street layout as the simplest and most general, the frequency of street intersections and the distances between parallel streets vary with each community. This variation has no relation to the character of the neighborhood, the use of the street, the type of traffic or the value of the land that must be used for street purposes.

We find long blocks in the business district, where short blocks would be most suitable and short blocks in sparsely settled districts, where long blocks would be more economical and more efficient.

There are no studies of the best standards of street frequency or block sizes, beyond what has been done in recent years by way of actual plans for street layout. These are based upon general experience rather than upon carefully planned studies. Such studies would reveal the nature and character of street uses and the values of certain street layouts in relation to the needs of the community or a particular district.

A study along this line would involve an examination into a variety of factors which I shall attempt to outline briefly in this article.

Frequency of streets involves distances between parallel streets and distances between intersections. The objective points of each street is a factor in such a study and this objective will determine to a large extent the frequency of its parallels.

Let us consider two sets of streets, one set running North and South, and another running East and West, or nearly in correlation to these points of orientation. What are the factors to be considered in a study of these two sets of streets?

If either set of streets is directed towards a large area of population into which much traffic must flow, these streets must be sufficiently frequent to care for the necessary traffic so that there would be little, if any, congestion.

A study of this traffic must be made with a view to ascertaining not alone its general objective, but the distribution of that traffic after the boundaries of the objective have been reached. If the objective consists mainly of a small area with few streets the problem of allowing the streets to carry traffic to the center of the objective is very difficult. It must be done by degrees and the converging of the streets must be such as not to concentrate at one or a few points, but be distributed over a considerable street frontage. The economy of letting traffic into a stream of other traffic at one or two points only is quite questionable. This means that we must study with considerable accuracy the problems of street convergence with a view to merging traffic without confusion and without overtaxing the streets that are to receive such tributary traffic.

The question as to whether such streets should be 500 or 1000 feet apart must be determined by a careful study not only of the actual traf-

fic, but of the new traffic that might be created by an improvement in street connections. Whether such streets should be diagonals or merely parallel streets is also a factor that must be determined by the capacity of the objective area and its streets to absorb the additional outside traffic volume.

The width of objective streets is sometimes settled by providing one street of great width, say from 150-200 feet, the contention being that the width of the street stands in direct relation to its capacity for traffic accommodations. This, however, is not the case. A street one hundred feet wide may accomodate more than one half the traffic of a street two hundred feet wide. The ordinary railroad tracks have fixed avenues of movement, but vehicular traffic depends upon the personal equation, the use of the street, the differences in speed and type of vehicles, the use of vehicles for business, pleasure or the carrying of goods.

There is no doubt that we would find certain psychological factors involved in the use of streets which would affect the space required by a given unit of traffic according to the width of the street. The mind can carry out certain processes of manipulation provided the number of vehicles is not too large, therefore increasing the factors of hazard in the relation between vehicles.

Just how these factors are to be determined and how far the problem of traffic congestion can be solved by street widening as compared to street paralleling is still unknown. Light could be thrown upon the subject by study of certain streets which represent specific widths and bear certain relations to traffic.

I could call to mind a number of cities in which such studies would bring satisfactory results so that a more or less scientific standard could be established.

When we consider streets with limited objective or which only serve certain neighborhoods it is obvious that the frequency of the streets is not so important. Long blocks have the advantage of reducing crossings, increasing speed between crossings and affording a better opportunity for intersection control. The question as to the frontage values, which are greater in the short block, is naturally to be considered, but in residential streets the frontage is of comparatively little importance. Just how long the blocks should be would depend upon the amount of traffic, the width of streets and the amount of parking space required for outside vehicles.

We shall undoubtedly come to the time when the long block will prevail in the residential districts and the short block in the business district. There is a very definite relation between amount of frontage and business values and the parking facilities, and the length of the block must be considered in this connection.

It is possible to establish block units which would be of such standard sizes as to lend themselves to subsequent subdivision, when a district changes from a residential to a business area. What these units should be must be determined by very careful study.

It seems clear to all students of city planning that we have too much area devoted to streets and not enough street area accessible to traffic. It is not a question of street surface, but one of adequate distribution of street surface to meet the needs of traffic in its relation to distribution and objective of travel.

Billions of dollars in land values, street improvements and time are wasted every year in this country because we have not taken the trouble to study our street needs. It would take a comparatively insignificant sum to study the conditions that would yield the necessary solution to the problem.

Geometrical Relation. In another article I have pointed out the fact that the L'Enfant, the planner of Washington, developed the triangular and trapezoid block and that Rudolph Muller created the hexagonal block.

These types of blocks are largely the result of street orientation and street lines such as the diagonal and the acute and obtuse angle intersection result from irregularity or special street layouts. We may also mention the circular street which we find in many of the Garden Cities and in the cities where fortifications have been converted into boulevards. We also find a few examples in this country, notably in Washington, Indianapolis, etc.

The problem of the block form is not alone to be considered from the point of view of the use of the frontage, but also from the point of view of light and air and particularly from the point of view of traffic.

There are certain problems involved in the use of land on streets with corners that are irregular and where there is no clear and uniform relation between frontage and building area. Circular or any of the blocks with sharp angles are not economical for building purposes unless the frontage is a more important factor than the floor space.

Just what the architectural treatment of these irregular blocks should be and how they could be made to yield the best architectural and economic results has not yet been studied with any degree of scientific knowledge. If we are to develop irregular blocks and if we are to have various types of street angles we must be sure that we have solved the architectural problems involved in such types of streets. The main difficulty in the free planning of street systems will come from the problem of land use. The two are inseparable and must be solved at the same time.

How traffic would be affected by too great a frequency of acute and obtuse angles is still to be determined. We are used to the right angle turn. We should know what the factors of safety, speed and traffic control would be in cases where blocks are irregular and angles vary from the most acute to obtuse and round.

The knowledge we have at present on the subject of street frequency and block shapes is negligible. If we are to free the cities from the monotony of the square block and the rigidity of the right angle we must find a substitute that will meet our modern needs for safety, speed and economy. We must do this, however, in conjunction with the architect who must solve the problem of economical use of street frontage and irregular lot lines.

New York is developing a new type of architecture to meet the requirements of light and air. The country as a whole must solve the problem of providing adequate traffic routes without destroying the values of land as building sites.

* * * *

Flagstone and Brick Walks

Among the types of walks which present interesting problems in construction are flagstone walks and brick walks. The success of any walk, especially when constructed on a clay soil, depends upon a thoroughly drained foundation. Flagstone walks may be laid either upon a foundation of cinders and loam or upon a foundation of concrete. Brick walks when laid in the colder climates are seldom constructed upon any foundation other than concrete. Brick walks when constructed under climatic conditions where frost action is negligible are often laid upon a sand foundation or upon a cinder-and-loam foundation if the natural surrounding soil is clay.

Old Mission and Atlas Cement Used.

CALIFORNIA PALACE OF LEGION OF HONOR, SAN FRANCISCO
G. A. APPLEGARTH, ARCHITECT R. McLERAN & CO., BUILDERS

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Published Monthly in the Interest of the Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast by The Architect and Engineer, Inc.
PUBLICATION OFFICE:
627-629 Foxcroft Building, San Francisco
Telephone Douglas 1828
The publishers disclaim any responsibility for statements made in the advertisements of this magazine.
Terms of Subscription
(Including postage) to all parts of the United States, $2.50 per annum; to Canada 75c additional; to all Foreign points $1 additional
Vol. 79 NOVEMBER, '24 No. 2

THE architect's planning ability extends beyond the single building; it includes the grouping of related buildings and even the essential features of city planning. The opportunity for public service in this phase of planning is constantly arising in our cities because of rapid increase in population, expanding business districts and cramped arteries of communication resulting from the astounding increase in automobile traffic.

THE BACKWARD COME FORWARD

The question of architects signing their work is still being debated, with an increasing sentiment in favor of inscribing the designers' names on the corner stone or upon a suitable placque, either outside or inside a building of public or semi-public character. Not until this practice is generally accepted by the profession and followed as a duty, may our architects hope to receive the public recognition of their work that they feel they are entitled to. Besides giving the architect the publicity he deserves, the plan serves to impress the layman with the importance of competent architectural supervision.

PRESENT-DAY ARCHITECTURE

America is working out its own notions of architecture despite the fondness of Americans to identify our effort in this field with that of the ancients, Professor William A. Boring asserts in his annual report as Director of the School of Architecture of Columbia University to President Nicholas Murray Butler.

"It is now fashionable in America to liken our tendencies and our probable decline to those of Rome, citing as proof the resemblance of American public buildings to those of Rome," says Professor Boring. "While our stadiums and places of public assembly are not unlike those of the ancients, the majority of our buildings are of a new system of construction.

"This requires us in our teaching to guide students to personal and independent thought in design, and to acquaint them with the achievement of the past and those truths of beauty which consciously or unconsciously control all artists.

"Training in architecture might well be defined as leading from instruction to reproductive imagination, from this to productive imagination and finally to vision, that divine sense with which genius is endowed and which we endeavor to cultivate in the lesser mortals who have to work for it.

"Imagination produces the first idea. Vision is the power to give this idea definition. The nebulous idea, without form and void, must be followed by a successive process of study to crystalize, round out and perfect it in mass, line, proportion and color in order that it may become architecture.

"Vision is that Godlike quality of the Greeks which envisaged

beauty, clearly defined, to the minutest shadow of a line and the most delicate perception of proportion. To few it is given to see things right without infinite pains; our problem in the School of Architecture is to stimulate the imagination and to train the vision by bringing beautiful form to the ideas which are the children of the students' imagination."

PICTURES are necessities. If we are to have civic beauty we must give to our children the heritage Europeans have. In public places, churches, schools, restaurants, and offices should we see the best products of our modern painters. We cannot have the old masters in abundance, we can have the modern painters—and these, bear in mind, will be the old masters of tomorrow.—CUTHBERT HOMAN.

COMMUNITY BUILDING EXHIBIT

Although the whole of the civilized world is engaged in the building and rebuilding of cities there is little by way of available information centered in one place that could be consulted by those engaged in the various phases of this type of creative effort.

The City of Vienna, Austria, has for more than a quarter of a century maintained a city planning museum in which all the important plans of the world cities were represented in some form. Patrick Geddes, the English Town Planner, gathered the largest amount of city-planning material, that could be used as a traveling exhibit and carried from city to city, from country to country and from continent to continent.

During the second year of The World War this exhibit was destroyed while in transit from Australia to England and so far Professor Geddes has not had the opportunity to replace it and again render service to the interests in city planning.

The Pacific Coast is the most rapidly growing urban center of the world. We need to have before us all the experience and knowledge in city building that the world can afford. It is to the interest of architects, engineers, builders, city planners and city officials to maintain some kind of a clearing house for information on city planning. I believe we have ample reason, sufficient resources and adequate knowledge of matters relating to city and town planning to establish such an exhibit, museum, or whatever we might wish to call it, and make its center in the United States and preferably on the Pacific Coast.

—C. A.

REPAIRING CONCRETE BUILDINGS

Architects of newly completed buildings are reminded that it is good policy to caution the owners that a careful inspection of the exterior surfaces should be made every six months. The painting on exposed steel work should be observed and the paint coat maintained in first-class condition. If any corrosion of steel reinforcement is noted, the contractor should be immediately notified in order that an inspection may be promptly made and decision reached and recommendations made as to the best method to make this repair. Any delay in making repairs to exterior surfaces is apt to be very costly, as experience has shown that repairs can be made at comparatively small cost if taken in time. "A stitch in time saves nine."

Whenever it is necessary to make a repair to the exterior of a building that requires the addition of concrete to the outside, care should be taken to see that this is thoroughly done. If it is necessary to use wire mesh or expansion bolts, the mesh and bolts must be of a non-corrosive metal, for if steel mesh or bolts are used, they are very apt to rust and the repair will consequently be only temporary.

When Architects Pass the Burden

(Editorial in Engineering and Contracting)

A minority of the architectural profession makes a practice of turning out incomplete plans which the contractor is required to fill in. Still worse, some

architects inadequately check their plans and specifications, yet require the contractor to assume responsibility for work under them. It is small wonder that the contractor is roiled by such practices, and that contractors' organizations are pressing for their abolition.

Why should a contractor be required to supply drawings of structural detail's? Primary responsibility rests with the architect, and if he encounters structural features beyond his ability he should employ an engineer to work them out for him. It may be perfectly possible for contractors to provide in their bids for the cost of such work when it is required of them, but such possibility does not make the arrangement desirable.

Architects commonly resent the taking over of their functions by contractors; but when they thrust upon the contractor responsibility for a portion of design they are beginning a course whose logical outcome is to concentrate the whole of both design and construction under a single head. And the practical application of this follows, whether the architect's requirement of the contractor is for the design of specific features or for the assumption of responsibilities for the accuracy of design.

It will be well if the leading organizations of architects, structural engineers and contractors will combine to establish a definite code covering such points. With a code in effect among the societies and associations its practical acceptance among non-members will be so general that the evils will cease to be important.

Professional Ethics the Safe Guide

(Southwest Builder and Contractor)

Under the caption, "Why Unethical?" The Architect and Engineer prints the following:

It is now recognized not only to be unethical but dishonest for an architect to accept any commission or favor or rebate on materials specified by him or on goods or materials purchased by him for or on account of his client. But suppose that all such funds so secured were credited to the client's account or if the checks received by the architect in payment for such commissions or rebates were endorsed to the client, who is harmed? Should material dealers and others quote lower prices to architects than to individual owners? Should not an architect be considered as a wholesale dealer? If an architect specifies certain goods and contracts are based on the specifications, the selling cost of those supplying the materials so specified has been reduced to the minimum. Therefore, should not the usual selling cost be credited on the sale?

"These questions have all been asked and answered before, says a writer in the Illinois Society of Architects Bulletin. Human nature being as it is, professional bodies generally have taken the position that such practices are to be discouraged. If, however, the architect faithfully and honestly accounts to his client for every cent so received and if the client is advised in advance of about what he may expect, why is the practice unethical or dishonest?

But why raise the question whether violation of professional ethics is unethical or dishonest? One definition of ethics is "the science of moral duty." That is the sense in which it is used in the establishment of professional ideals. It is not a question, therefore, how closely a man can come to violation of a law without violating it. It is a question of living up to moral duty as prescribed by the ethics of any profession. If "it is now recognized not only to be unethical, but dishonest, for an architect to accept any commission or favor or rebate on materials specified by him on goods or materials purchased by him for or on account of a client," that ought to be a sufficient rule to direct him in the line of his moral duty.

If there is any question at issue, it is whether an architect can be "professional" and "unprofessional" at the same time. Violation of a code of ethics is considered unprofessional and is recognized as grounds for censure and even expulsion from societies composed of professional men. Just where the line may be drawn in determining what practices are unethical is something to be determined by the individual or group of individuals, or society, fixing the rules for professional guidance. If there is any question in the mind of the individual as to where a line should be drawn the safe policy is to follow the standard set up by the majority.

COMMUNICATIONS

American Methods in Paris

Editor The Architect and Engineer,

Dear Sir: Two years have slipped away and I have come again to Paris, the city of my early student days abroad. I look about for the changes one expects—and finds, in new world cities, but I find few if any here—one new wing to a department store, one new addition to the endless branches of the Credit Lyonnais, a new hotel on the borders of "Le Quartier Latin," and that is about all—they have adopted, however, an innovation borrowed from us—the paving of many streets with wooden blocks soaked in creosote, using our process of impregnating the blocks of their native wood. An American engineer has been in charge for some time and the progress is remarkable. Old streets of chipped and uneven basalt blocks of very ancient vintage are appearing in fine smooth silent coats of wood, tarred over, and the lessening of the noise is marked, for one must recall that the horse and the iron wheeled wagon are in good form here. The old buildings still retain, as always they will, their grime, their beauty, and their sense of the softening influence of centuries of exposure to a harsh, yet not unkindly climate, for it soon wears down and tones new structures until they fit into their surroundings and do not loom forth alone and shriek their newness to all who pass.

The Seine, that still, placidly flowing stream, sweeps silently under its old, old bridges, retains its charm ever fresh and teems as always with its streams of barges bound up and down, moving slowly as befits all movement amidst old surroundings.

To sum up, Paris is the same, for which one may indeed be thankful in this hurrying world. The bread is still in four-foot loaves, and the cats are still in countless numbers, only the Right Bank teems with cosmopolitan life and pleasure seekers from all the lands of the globe.

E. N. KIERULFF, R. S. M.
Foreign Correspondent.

Architects and Commissions

Editor The Architect and Engineer,

Dear Sir: I should like to take issue with the writer in the Illinois Society of Architects' Bulletin who maintains that it is perfectly legetimate for an architect to receive a commission or bonus of some sort from the manufacturer or agent whose goods he buys or specifies for his client.

The writer states that if an architect specifies certain goods and contracts are based on the specifications, the selling cost of those supplying the materials so specified has been reduced to the minimum. This is not true, according to information I have obtained from building material dealers and manufacturers. A product is never sold when specified. There is many a slip before the order is signed. Most specifications are constantly revised in order to cut down the total cost or to accede to the whims of the client. The manufacturer cannot base his production or volume of sales on specifications. Architects, as a rule, are very quick to judge a fellow architect unethical if he cuts his commission in order to get a job.

A manufacturer could reduce the quality of his product unknown to the architect or his client or refuse to give service on the job where an architect has accepted a commission. The client would have no comeback and the architect would be in a delicate position.

I believe the above mentioned writer and the architects of the country should study modern merchandising methods before requesting commissions or passing judgment on its practice.

I know of manufacturers and manufacturers' agents who have called dozens of times before architects have specified their material or equipment. The cost of selling these men is much more than when the architect specifies on the first call, but prices are not raised as a result. Why should they be lowered then because an architect specifies after the first call? The selling cost of material and equipment for building purposes is not based on individual sales but on the average sale.

It is well to remember the advice of El Hakeem, the wise sage of Bagdad, who warned a young man to look for the priceless ingredient when buying, the priceless ingredient being the name of the manufacturer. The contributor undoubtedly has noticed that the large successful manufacturers who maintain quality standards and who have a reputation and good will to hold always maintain standard prices.—G. H. S.

BOOK REVIEWS

Edited by

CHARLES PETER WEEKS

THE ARCHITECTS' LAW MANUAL, Published by Clinton H. Blake, Jr., L.L.B., A.M.; Published by Pencil Points Press, Inc., New York. Price $5.00.

This book has been prepared for the purpose of providing the architect and architectural student with a means of getting a firm grasp of the legal aspect of the practice of architecture. The text is clear, concise and readable. It is so indexed that any point that may arise can be looked up quickly.

The author is especially well equipped to prepare a book of this kind because of his extensive practice in this particular field. He is the author of several works on relative subjects; is the editor of the Legal Department, The American Architect and The Architectural Review, and was special lecturer on the Law of Architecture, 1921-1922, Massachusetts Institute of Technology.

The architect should not try to be his own lawyer, but if he understands law, he can be of great help to his lawyer in drawing contracts. Most lawyers' contracts are as weak, architecturally speaking, as architects' contracts are, legally. A lawyer, as a rule, is so anxious to cover every loophole, that the document is so formidable that neither architect nor client wants to sign it. But the architect, having legal knowledge, can so direct the lawyer that a declaration of peace, instead of war, is made.

The Architectural Law Manual will help the architect in this regard.

Another point of interest is the review and comments on the Standard Documents of the Institute.

—C. P. W.

INTERNATIONAL CITIES AND TOWN-PLANNING EXHIBITION, English Catalogue—Jubilee Exhibition, Gothenburg, Sweden—1923; 390 pages.

The catalogue of the International Cities and Town Planning Exhibition has only recently become available in this country. It is a document prepared with the utmost care under the direction of Verner Hegemann, who is well known in this country and particularly on the Pacific Coast.

The 390 pages of this volume are a model of compactness. The illustrations are well chosen and the descriptive material is brief and to the point. The book is not an account of achievement in city planning in Europe and America, but rather a record of the efforts towards city planning from the beginning of the Seventeenth century to date. The work of Wren and Haussmann, as well as early plans of the most famous old cities of Europe, may be found represented in the form of very clear and well chosen illustration.

A close examination of the book makes one regret that the experts connected with the exhibition did not find it possible to prepare some kind of an estimate of the value of some of the more important work in city planning. Frequently exhibits are rather confusing, even to the best informed, because there are no indications as to the practicability of certain of the plans exhibited. Beautiful drawings are not always the most practical plans. They must be tested and examined in the light of modern needs. —C. A.

Competition for Cover Designs

The success of the cover competitions held the last two years, has led the House Beautiful to repeat this event and again to offer two prizes, one of $500 and one of $250 to the successful contestants. A number of honorable mentions will also be given. The competition closes February 7, 1925. Full particulars regarding the competition may be had on application from the Competition Committee, House Beautiful, 8 Arlington street, Boston, Mass.

With the Architects

Building Reports and Personal Mention

Form Alumni Association

The Alumni Association of the School of Architecture of the University of California was organized at a meeting held in the University Club, Los Angeles, August 27. About 40 alumni were present. Following the adoption of the by-laws and constitution, officers were elected and installed for the coming year as follows: President, Charles H. Cheney; vice-president, Edgar H. Cline; secretary-treasurer, Harry V. Adams; executive board, Lester H. Hibbard, C. R. Johnson, Edgar W. Maybury and Edward Cray Taylor.

The formation of the organization was prompted by the presence of Professor John Galen Howard, fellow of the American Institute of Architects and director of the School of Architecture at the University of California, who was the guest of honor at the Architectural Club the following evening. Mr. Howard spoke of the unlimited advantages of the organization toward strengthening the ideals of the architectural profession.

Mr. C. H. Cheney, city planning expert, suggested the establishment of a fund for various fellowships to be awarded the most promising students at the University of California, that they may have the advantages of further study in Europe.

Designing Many Churches

Architect Robert Orr, 724 South Spring street, Los Angeles, writes that his office is engaged in the preparation of plans for new churches as follows:

First Baptist Church, Sawtelle, costing	$50,000.00
First Presbyterian Church, San Fernando	50,000.00
First Mennonite Church, Upland	30,000.00
First Christian Church, San Bernardino	100,000.00
First Methodist Episcopal Church, Redlands	40,000.00
First Baptist Church, Taft	25,000.00
University Christian Church, Los Angeles	75,000.00
University Christian Church, Seattle	250,000.00
Wilshire Boulevard Christian Church	500,000.00
South Park Christian Church, Los Angeles	30,000.00
First Christian Church, Santa Rosa	40,000.00
Home for the Aged, Pasadena	150,000.00
Magnolia Ave. Christian Church, Los Angeles	150,000.00
Alberta Mallory Church of Christ, Portland	100,000.00

Marshfield Hotel

A new hotel, costing $400,000, is to be erected at Marshfield, Oregon, for a corporation headed by Dr. George E. Dix. The plans for the building are being prepared by Architects Hougtaling & Dougan of Portland.

Los Angeles Chapter Meeting

Architect John T. Vawter, who is recognized as an authority on reinforced concrete, delivered an address on "Concrete Construction" at the October meeting of the Southern California Chapter of the American Institute of Architects. Mr. Vawter emphasized methods of treating and moulding concrete for ornamentation.

In the absence of President Reginald D. Johnson, who was ill, Mr. A. M. Edelman, vice-president, presided. The program was arranged by Mr. D. C. Allison. Mr. Ivan Kelso spoke on the Community Chest organization and Mr. Sumner Hunt urged the support of two measures to be voted upon at the November election —the proposed street improvement program recommended by the city traffic commission and the $5,000,000 bond issue to assist in opening and widening streets.

Del Monte Country Club

The Del Monte Properties Company announces plans for a Country Club for the Monterey peninsula. Mr. William Raynor of New York, co-partner of Mr. Charles B. McDonald, the internationally known golf architect, spent several weeks on the ground designing two 18-hole golf courses. The scheme also includes six tennis courts, a bathing pavilion, community riding stables, connecting with 25 miles of bridle trails, and a trapshooting grounds.

Architect Clarence Tantau has designed a beautiful club house in the Spanish type. Mr. Tantau has also worked out plans and designs for inexpensive but appropriate homes of Spanish architecture that will be built in the club property.

The club is to be known as the Monterey Peninsula Country Club.

Claremont Residence

Architect C. W. McCall of Oakland has prepared plans for a $14,000 home near the Claremont hotel, Oakland, for Mrs. Kleins Smith. Mr. McCall has also completed plans for a passenger station for the Key Route System at Oakland and Jerome avenues.

Designing New Church

Architect Creston H. Jensen, Santa Fe building, San Francisco, is preparing working drawings for a reinforced concrete church for the Daly City Parish, Rev. Charles Bertola, pastor. The edifice will cost $40,000 and will seat 400 persons.

Personal

Architects Willis Polk & Company have moved from the Hobart building to 277 Pine street, San Francisco. This office has completed plans for the new Women's club building to be erected on Post street, adjoining the St. Francis hotel.

Architect Otto H. Neher has moved from the Marsh-Strong building, Los Angeles, to 1110-1112 Insurance Exchange building, that city.

Architect George W. Kelham of San Francisco left October 10th for Europe on a combined business and pleasure trip. Mr. Kelham expects to be absent six months.

Architects Shea & Shea, of San Francisco, are now permanently located in new quarters at 454 Montgomery street, San Francisco. Dr. H. F. Van Trump, former newspaper man, is associated with the firm, which also maintains branch offices in the Alameda Title Insurance building, Oakland.

Mr. Arthur Gruenberger, San Francisco architect, has been awarded the first prize for architectural plans in a competition with sixty-eight architects from all parts of the world for the design of a Jewish temple to be erected in Vienna. Within a few months Mr. Gruenberger will return to Vienna to superintend construction of the temple.

Mr. V. S. Persons, sales engineer, announces the removal of his San Francisco office to 1212-1213 Hearst building.

Mr. William Mellema, architect and consulting engineer, announces the opening of offices for the practice of architecture and engineering at 1017-1018 Central building, Los Angeles.

Architect John E. Kunst, 511-12 Cotton Exchange building, Los Angeles, was knocked down by an automobile at 42d and Main streets, Los Angeles, and quite badly injured. The accident occurred September 7th.

Architect Perry Thomas Poage has moved from 1108 O street, Sacramento, to 330 24th street, that city.

Designing Many Residences

Architects Masten & Hurd, 278 Post street, San Francisco, are busy on plans for new homes in St. Francis Wood and the Oakland Bay District. They have just completed drawings for an English house in Claremont Court for Mrs. G. R. Kingsland and for a Colonial home in St. Francis Wood, San Francisco, for Mr. Joseph Hatter; also three houses in the same district for the Mason McDuffie Co.

Seattle Office Building

A four-story Class A addition is to be built to the Washington Securities Company's building at Fourth avenue and Stewart street, Seattle. Mr. Henry Bittman is the architect.

Lauds California Architecture

Mr. F. S. Laurence of New York, executive secretary of the National Terra Cotta Society, while on a recent visit to California, praised the architecture of our Coast cities in high terms.

Color in architecture was the particular subject upon which Mr. Laurence spoke while in Los Angeles. He stated he was much impressed with the artistic design of the smaller business buildings of that city. So far as he knew no particular effort has been made in any city in the East, or in any other part of the country, to make such buildings more than simply utilitarian. Los Angeles builders strive for pleasing architecture as well as for useful buildings, he said.

Speaking of the larger buildings of Los Angeles, Mr. Laurence declared that from an architectural standpoint they are equal in every respect to buildings of the same type in New York City.

Los Angeles Garage

Plans are being prepared by the architectural department of Shields, Fisher & Lake, Pacific Southwest Bank building, Fresno, for a nine-story Class A garage to be erected on the southwest corner of Sixth and Carondelet streets, Los Angeles, for the Carondelet Fireproof Garage Company, Incorporated. The same firm will also be in charge of construction, the building to cost approximately $400,000.

Piedmont Residence

Architects Williams & Wastell, American Bank building, Oakland, have completed working drawings for a beautiful Italian home in Piedmont for Dr. Robert Dunn to cost $33,000. The same firm is making plans for a new home for Mr. Claude M. Wales, business manager of the Berkeley Gazette. The house will be erected in Northbrae, Berkeley.

Goes to Sacramento

Mr. Edward Flanders, formerly a member of the drafting department of Weeks & Day, San Francisco, is now associated with Architect Leonard Starks, Ochsner building, Sacramento. This office has a large amount of new work on hand, including the million dollar Elks building, a $100,000 garage, and a $60,000 church for the Fremont Presbyterian Society.

Oakland Office Building

Oakland is to have another large office building for physicians and dentists. A coterie of professional men have formed a corporation and employed Architects Wythe, Blaine & Olson to prepare plans for a twelve-story office building to be erected at 19th and Franklin streets. The project has been financed by a Los Angeles concern.

Drawings Equivalent to Professional Services Rendered

(From Southwest Builder & Contractor)

Messrs. W. S. Hart and H. S. Hart, owners of a lot in Sacramento on which they contemplate erecting a building, have sued F. A. S. Foale, an architect of Sacramento, for $20,000 damages, alleging that a lien filed by the defendant to secure a claim for architectural services interfered with the consummation of a sale of a portion of the property which was being negotiated. The complaint alleges the lien was "filed maliciously and without right" because the plans made by Mr. Foale were not being used for the erection of the building. Without knowing any of the details of the case we feel quite certain the architect must believe he has some claim against the defendants else he would not have filed a lien. Whether the plans were used or not does not enter into the case. If Mr. Foale performed architectural services in a professional way he was entirely within his rights in filing a lien to secure any claim which had not been satisfied by the defendants.

Many people think that when they secure drawings from an architect they are not obligated unless the plans are used in actual construction. Those same persons would expect, however, to pay a fee if they consulted a lawyer, even though they decided not to retain him; and, if they called upon a doctor for advice, would expect to pay for it even if they did not follow it. Preparation of sketches or drawings for a building are just as much professional service as legal or medical advice. Architects, themselves, perhaps, are as much to blame as the public for lack of appreciation on the part of the public of their obligations for professional service. They allow themselves to be imposed upon because of their fear of offending some one whom they may consider a possible client, hence the popular notion that if an architect's drawings are not used no obligation to pay for them is entailed. Litigation is not a thing to be desired or sought, but the moral effect of every case won in court is of inestimable value to the architectural professional.

Recognition for San Francisco Man

Mr. Donald McLaren of the MacRorie-McLaren Company, landscape engineers, with offices in the Phelan building, San Francisco, has been named official landscape architect of the proposed Transcontinental Highways Exposition to be held in Reno, Nevada, in 1926.

The Exposition is intended to celebrate the completion of the Truckee-Reno highway along the Truckee river and is primarily to influence the trend of automobile tourist traffic through Reno to Northern California. In the past this tourist travel has been diverted at Salt Lake to Southern California.

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DON PEDRO DAM, NEAR LA GRANGE, CALIFORNIA

The Don Pedro Dam

Another Monument to the Engineering Profession

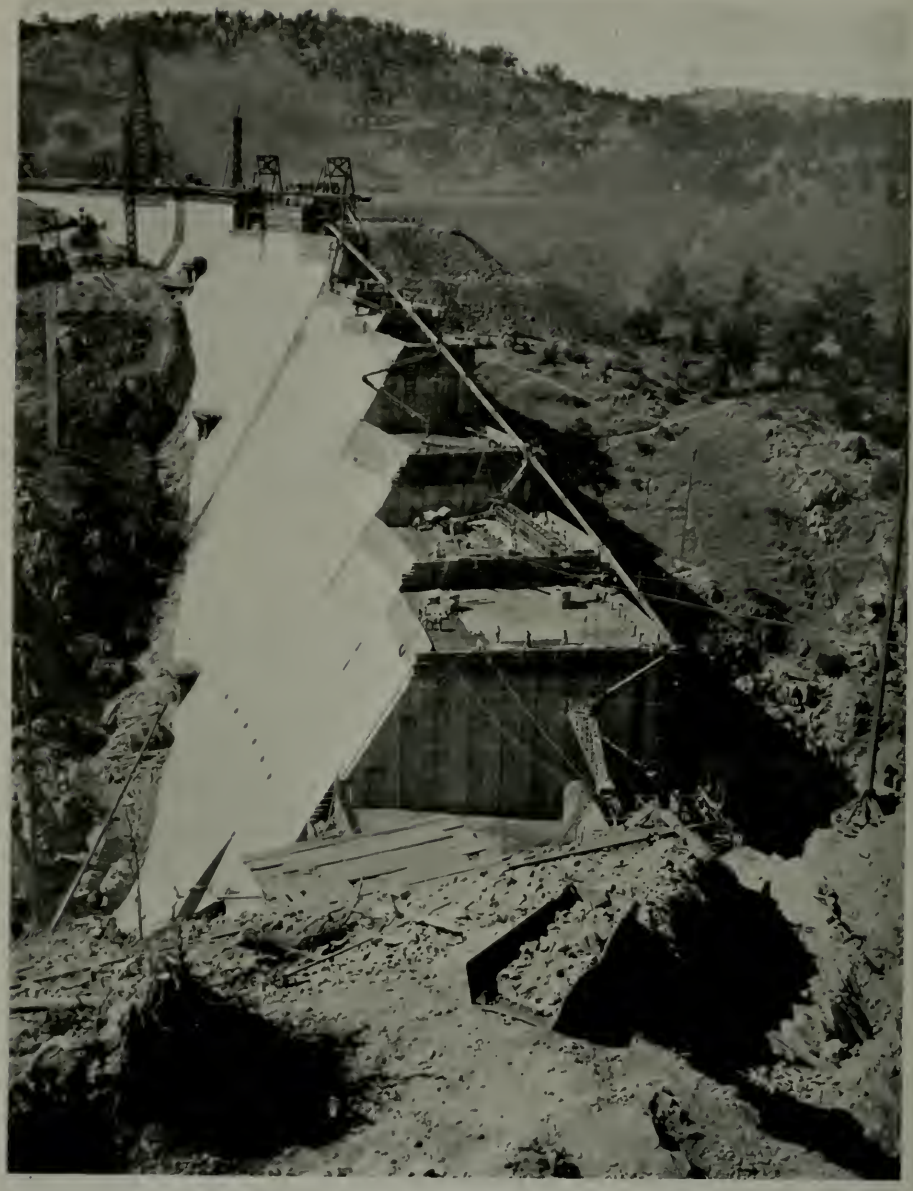
INFORMATION and photographs furnished by Mr. Daniel McFarland, civil engineer, make possible the following account of the Don Pedro dam on the Tuolumne river, about eight miles east of La Grange, which is one of the most spectacular of similar structures recently erected in connection with California's giant irrigation developments.

More and more acres of land are being made tillable as a consequence of the Wright Act, sponsored by Mr. C. W. Wright of Modesto in 1887, which has brought to the attention of the people of our state, the practicability of water storage as an aid to agricultural practice.

Lying along the base of the picturesque Sierra Nevada mountains, the source of vast supplies of water in the forms of its many creeks and rivers, the San Joaquin Valley has been the scene of many irrigation activities similar to the Don Pedro dam, such as the Modesto and Turlock irrigation districts, and numerous others. The Don Pedro dam is a joint product of these two organizations.

The Don Pedro dam is 283 feet high,

TEMPORARY RAILROAD FOR TRANSPORTING MATERIALS TO DAM SITE



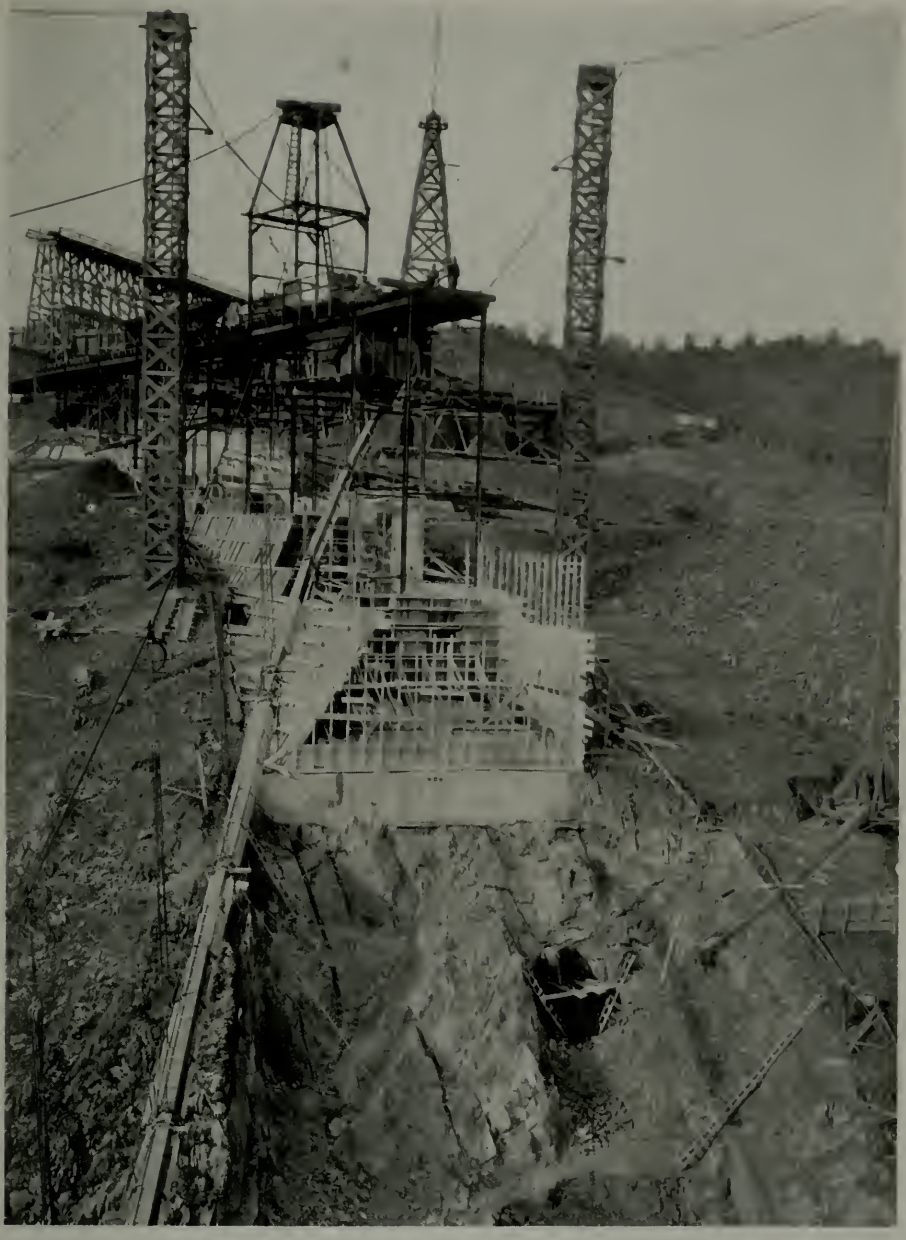
PROGRESS PICTURE NORTH END DON PEDRO DAM
Photo taken August 10, 1922

176 feet in width at the base, and 16 feet wide at the top, and the arch of the dam has a radius of 675 feet. The upstream face is practically vertical and the downstream has a slope of about six to ten.

Control of the water used in the power house and for irrigation is provided for by eighteen gates in the dam. Huge valves, each weighing twenty-five tons, control these gates which are operated by water pressure, permitting regulation by one person.

An interesting feature aside from an engineering viewpoint, is a roadway sixteen feet in width along the crest of the dam which enables visitors to view the lake formed above.

A good idea of the magnitude of this structure may be obtained when we enumerate the vast amount of materials, and



PROGRESS PICTURE NORTH END DON PEDRO DAM
Photo taken January 9, 1922

the temporary structures necessary, preliminary to its construction.

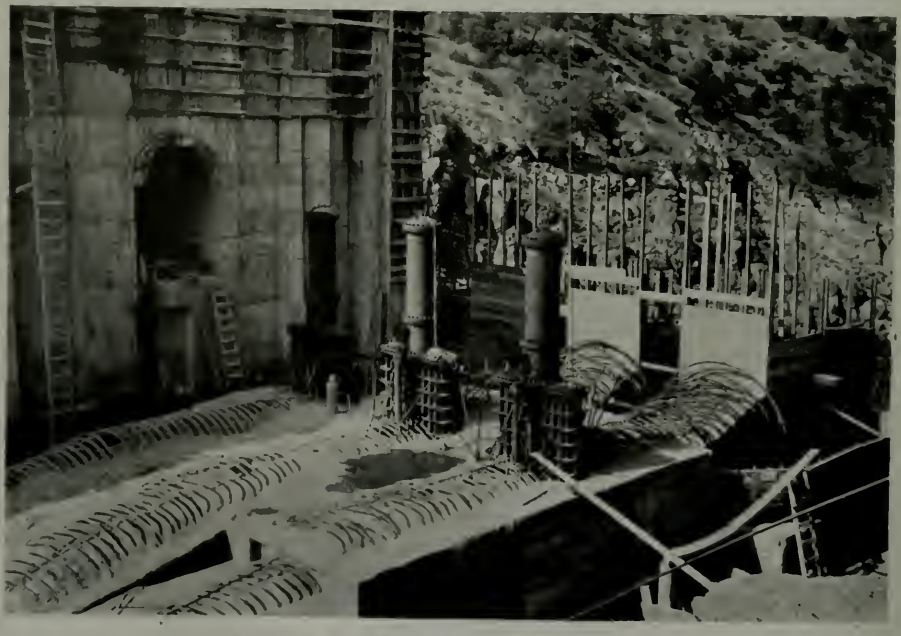
The dam is 1000 feet long, and this great structure with the spillway and power house, contains 300,000 cubic yards of concrete. It was necessary in order to bring the materials to the site of the dam, to construct a temporary railroad. The endeavor was in building this railway, to erect it in such a way as would permit of the greatest possible salvage.

As drainage ways, corrugated iron culverts were chosen, and instead of installing them on a level with the natural stream beds, they were placed near the top, thereby making little excavation necessary when the time for removal arrived. This feature of removability made the ingot iron pipes decid-

EXCAVATION ON TAILRACE TUNNEL, DON PEDRO DAM
Photo taken August 5, 1922

edly preferable to any other type, since their salvage value is practically 100 per cent. In fact the entire railroad was so constructed as to permit the removal of its materials at the end of two years' service. Even the trestle timbers were taken down with little loss.

The accompanying photographs show various stages of progress in this monumental construction. The completed work is one of the most characteristic expressions of the American genius for practical accomplishment.



PENSTOCK SLIDE VALVES, DON PEDRO DAM
Photo taken July 20, 1922

Field of the Contractor

Code of Ethics for San Francisco Architects and Builders

FOR some time past there has been under discussion the formulation of a Code of Ethics for the building industry of San Francisco and vicinity. Recently the Industrial Association of San Francisco, San Francisco Chapter of the American Institute of Architects and the San Francisco Builders' Exchange, appointed a representative to attend joint meetings at which the matter received extensive consideration. In order to have a basis to work on, a copy of the Code of Ethics in effect in the New York building industry, and which has had a very salutary effect there, was secured and submitted to the committees. Naturally, there are many features of the New York code which have no local bearing, but likewise there are certain fundamental principles which apply as thoroughly in San Francisco as in New York. The final draft, representing the points unanimously agreed upon, and which has been referred to the parent bodies for their consideration and approval, is given herewith in full:

1. The owner or architect should not call for unnecessary or full estimates on tentative projects, without advising those asked for estimates that the project is tentative.

2. The owner or architect should not call for an excessive number of bids. It is recommended that not to exceed six bids be called for.

3. When the owner has determined to build he should first decide whether he is to let a general contract, segregated contracts, or a percentage contract.

4. If the decision is to let a general contract, the owner or architect should call into competition only general contractors to whom he is willing to award the contract. He should then award the contract to the low bidder on the plans and specifications sent out for bids, having required him to file with his bid the list of subcontractors whose figures he has used. He should then insist that the general contractor let his contracts to the subcontractors whose figures he used in making up his bid, provided such subcontractors are satisfactory to the architect.

5. If it is decided to let the job by segregated contracts, the owner or architect should only call in as bidders subcontractors to whom he is willing to award the work. Then he should award the segregated contracts to the low bidders on the plans and specifications sent out for bids.

6. If it is decided to do the work upon the percentage contract plan, the owner or architect should insist that the percentage contractor, when taking bids, should only call in as bidders contractors to whom he and the architect are willing to award the work. Then the owner or architect should insist that the percentage contractor award the job to the low bidders on the plans and specifications sent out for bids.

7. In case a general contractor or percentage contractor figures or estimates the total job himself when taking it from the owner, the owner or architect should insist that if, thereafter, the general contractor or percentage contractor decides to let subcontracts for any portion of the work, that he take bids only from subcontractors to whom he and the architect are willing to award the work. Then the owner or architect should insist that the jobs be awarded to the low bidders on the plans and specifications sent out for bids.

8. All bids should be opened in public at a set time and place, except where the architect or owner deems it impossible.

9. All owners should instruct their architects to write into all plans, specifications and contracts, a clause requiring all work to be done on the American Plan, and then the owner and architect should insist on the strict observance of this clause.

10. The architect should always act entirely in a judicial capacity in determining contract obligations, insisting upon full performance by owner and contractor; he should write into his specifications clauses providing for the observance by the contractor of all building ordinances, safety and sanitary codes; he should never require a contractor to perform any part of the services which is generally recognized as the work of the architect; he should not attempt to cover possible oversights or errors by indefinite clauses in the contract or specification; he should not engage in work in the building trades, except in his capacity as an architect.

11. The contractor should insist on enforcement of building ordinances and safety and sanitary codes; he should carry compensation insurance; he should refuse to deal directly with the owner where an architect has been employed for supervision, and should never submit to the owner directly, without the architect's approval and knowledge, any proposals or estimates; he should never improperly increase the cost of work or produce work inferior to that contracted for; he should deal fairly and justly with the labor employed by him and make every effort to afford opportunity to apprentices to learn the building trades.

12. Labor employed in the building trades should never endeavor improperly to increase the cost of the work or to produce inferior work; labor should never endeavor to restrict the quantity or quality of the output of the individual; labor should co-operate in affording every opportunity to apprentices to learn the building trades and, when qualified, to practice their trades.

Winter Construction—Concrete Bridge

The California Highway Commission desires to advertise for bids during the winter for the construction of a bridge in Nevada County, about one and one-half miles east of Summit.

The Commission suggests that prospective bidders view the site of the work at this time in order to properly examine the ground and the amount of the work to be done, for at the time of advertising for bids, the ground may be covered with snow so as to prevent thorough examination.

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New Elevator Safety Orders

By D. J. HARRIS, Chief Elevator Inspector,
California Industrial Accident Commission

THE Industrial Accident Commission has adopted, as far as practicable, the Elevator Safety Orders as recommended by the Elevator Safety Orders' Rules Revision Committee and as passed at public hearings held in San Francisco on July 8, 1924, and Los Angeles July 22, 1924. This committee was composed of members of various organizations of municipal departments, users of elevators and manufacturers.

This committee worked for months on the orders with the object in view of formulating elevator safety orders that would obtain reasonable safety on elevators at the minimum cost and which would conform to standard methods of construction.

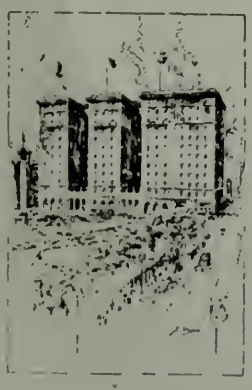
The orders will become effective January 1, 1925.

They have been made to conform to the existing Elevator Safety Orders in all cases where the existing orders supply a reasonable degree of safety. The new orders will clarify some of the existing orders where wording has been ambiguous.

The most important change in the orders is that Order 333 F has been made retroactive. This order requires that interlocks be installed on all hoistway entrance doors of passenger elevators before January 1, 1926. The existing elevator safety orders require that interlocks be placed on all hoistway entrance doors of passenger elevators installed subsequent to October 1, 1916, this being the date the present Elevator Safety Orders became effective. Due to the fact that statistics prove that the great majority of elevator fatalities occur at the hoistway entrance doors and could have been prevented by the installation of hoistway door interlocks the Rules Revision Committee recommended that this order be made retroactive so as to apply to elevators installed prior to October 1, 1916. This recommendation was passed at public hearings in San Francisco and Los Angeles, and finally adopted by the Industrial Accident Commission, to become effective January 1, 1925, and, as to installation of interlocks on existing elevators not so equipped, to be complied with not later than January 1, 1926.

The revised orders are now in the hands of the printer. As there are quite a number of changes in the orders, mostly of a minor nature, it is suggested that anyone interested apply to the Industrial Accident Commission for copies.

Special attention is called to Elevator Safety Orders Nos. 315 (a), (b), (c) and (d); 323 (b) and (e); 328 (a), (b) and (c), and 333 (a) and (b), as these orders deal with the design and construction of machine rooms, elevator



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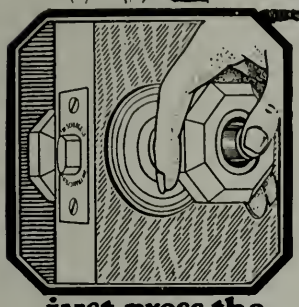

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cars, elevator hoistways, and hoistway entrance doors as affecting new installations of elevators installed after January 1, 1925.

Novel Type of Construction for Warehouse Foundations

The plans for laying the foundation of a new $1,500,000 warehouse for the California-Hawaiian Sugar Refining Company are attracting the attention of engineers from all sections of the country. The warehouse is to be constructed on concrete cylinders six feet in diameter and built from bedrock sixty feet below the surface of water and mud. In building such piers a large wood caisson is first lowered to the mud. The caissons are then driven through the mud to bedrock. The caissons themselves are of Oregon pine six feet in diameter, and when they have reached bedrock the mud and water are excavated and the caisson is filled with concrete. When the concrete has hardened the caisson is removed and the concrete cylinder remains.

The practice of building concrete cylinders of this size and depth has been followed, according to Engineer A. A. Brown, in order to defeat the destructive ravages of the teredo, which has long made harbor construction a problem in San Francisco Bay. It is estimated the present piers will last 100 years.

The new warehouse will have a deadweight storage capacity of 2,500 live load pounds per square foot. Prominent San Francisco engineers who have studied the foundation of the new warehouse have advanced the suggestion that the caisson type of construction might be suitable for the foundations of some of the large buildings of that city

State License for Contractors

Interest in the question of licensing contractors has recently been revived and Mr. Rosenthal's article on the subject in the October Architect and Engineer aroused much discussion. Mr. F. A. Schilling, of Schilling & Brown, building contractors of Los Angeles, has some very definite views on the subject which he has set forth in the following article printed in the News Letter of Southern California Chapter, A. G. A:

"The city attorney of Los Angeles was recently requested by the state department of labor to draft an ordinance requiring all building contractors to be licensed in order that fly-by-night and irresponsible contractors may be eliminated.

"It is only a question of time until licensing of contractors will be an accomplished fact and our association should get back of this matter and insist on a state examination. Licensing of contractors by the various municipalities is only a make-shift and will impose an unnecessary tax on each and every one of us. A contractor who understands his business and possesses the required skill, integrity and responsibility, should not be opposed to certification of contractors by the state, and certainly will have no difficulty in passing an examination. A contractor who cannot qualify should not be allowed to construct anything except small bungalows and sheds.

"This examination should be conducted by a state board of examiners composed of men of the highest calibre appointed by the governor, and our association should have a voice both in the selection of this board and the drafting of the law. Local licensing will not eliminate irresponsible contractors any more than surety bonds have done in the past.

"A distinctive name should be provided for all certified contractors and it should be a misdemeanor for anyone to use that name in connection with his business unless he has been certified by the state board. This certainly would place our profession, or business, if you please, on an equal footing with that of architects, attorneys and other professions.

"It should also be provided in this law that only such contractors as are actually engineers be permitted to style themselves "engineer" or to use this word in conjunction with any other word."

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This Issue—Santa Barbara Architecture

The ARCHITECT & ENGINEER

DECEMBER 1924

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Published Monthly by

THE ARCHITECT and ENGINEER Inc.

626-627 Foxcroft Building-San Francisco

W. J. L. Kierulff, President — Frederick W. Jones, Vice-President — L. B. Penhorwood, Secretary

SANTA BARBARA MISSION, SANTA BARBARA
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THE ARCHITECT AND ENGINEER

DECEMBER
1924

VOL. LXXIX
No. 3

Santa Barbara Architecture*

By WINSOR SOULE, A.B., B.S., M.A.I.A.

TO the eastern visitor, and perhaps to the native Californian too, the city of Santa Barbara, lying between the ocean and the Coast Range, has always held peculiar fascination.

Bright clear sunshine, mild ocean breezes, the sparkling strand and the misty mountains, together with a delightful old-world atmosphere, the inheritance of the Spanish conquistadores, all contribute in making an especially strong appeal to the artistic temperament.

The people of Santa Barbara themselves are taking advantage of this appeal in the effort to develop the city along lines which will be in full accord with its old traditions and its climatic advantages. In pursuance of this idea a society has been organized under the name of Community Arts Association whose policy is to foster the Drama, Art and Architecture and to awaken in the general public a keen appreciation of all the arts.

To the efforts of this society are due in large measure many of the recent architectural developments along the old Spanish lines and they were instrumental in instigating the recent Better Architecture Competition which was held in that city early this year. The competition followed closely the general procedure of former competitions of the same type held in Seattle, Los Angeles and other Pacific Coast cities, the purpose being to select the ten most notable examples of architecture within five miles of the city limits, the five most notable gardens and the five most notable small houses approximating $5,000 in cost, and to arouse and stimulate a greater public interest in good architecture.

By ballot of the resident architects, a jury of three architects and two laymen was selected to judge the competition, consisting of Messrs. Elmer Grey, David C. Allison and Pierpont Davis, all architects of Los Angeles, and Messrs. Fernand Lungren, artist, and William H. Conklin, both of Santa Barbara.

Even the casual observer, as he glances through the pictures of the

* Pictures of the Prize Awards will be found on Pages 56 to 73 inclusive. Photos by J. Walter Collinge.

prize awards, must at once be aware of the fact that Santa Barbara has fully realized her ambition of carrying on the heritage received from her founders, for of the thirty-five awards in this competition, twenty-nine of those chosen have followed the Spanish or Mediterranean precedent. And this is not to be wondered at for the climatic conditions in Santa Barbara are identical with those of the countries surrounding the Mediterranean, and to climatic conditions, perhaps even more than to progress of civilization and culture, is due the determination of the character of the architecture of any region.

The results of this competition and the influence of the Community Arts Association are already bearing fruit, for the merchants of the principal business streets are today awakening to an appreciation of good architecture and particularly to the type of architecture which seems by tradition and environment to be most suitable to their locality and this appreciation is being evidenced by numerous new buildings now under construction which will tend to improve the general attractiveness of the principal business streets and give them an individual character.

If American cities today are lacking in any one characteristic it is certainly that of local atmosphere. With the exception of such cities as San Francisco, New Orleans and Baltimore, any of our cities, great or small, might easily be interchanged one for the other and this similarity and lack of individualism has for many years been commented on by foreign travelers.

But in Santa Barbara the public has awakened to the possibilities of producing a modern American city which shall indeed have local atmosphere, charm and a distinct characteristic of its own and they are all working harmoniously together to produce this result.

Following is the report of the jury in detail:

The Chamber of Commerce,
Santa Barbara, Calif.
Gentlemen:

The jury nominated by the architects of Santa Barbara and appointed by the President of the City Planning Commission at your request to select, in its opinion, the ten most notable examples of architecture in Santa Barbara or within five miles of the city limits, the five most notable gardens, and the five most notable small houses approximating $5000 in cost, respectfully report as follows:

The instructions to the Jury were, "Points of architecture to be considered are usefulness, arrangement, relation of exterior design to interior design, beauty, harmony of detail, setting, purpose, color, and appropriateness. The size or cost of the structure is not unduly to influence the Jury's decision. There is a special quality possessed by some buildings and gardens—the elusive quality of charm—which must be taken into account, as it may be said to represent the soul of the design.

"All kinds and uses of buildings—residential, commercial, industrial, educational, religious, public and semi-public—should be compared by the Jury to see which seems to express the highest development of architecture. The final selections and lists are to be made up from those found most notable in the opinion of the Jury, regardless of size, type, or use."

As the ten most notable examples of architecture in Santa Barbara and vicinity, the Jury names the following (in alphabetical order, no priority having been attempted):—

County National Bank and Trust Company building, 1000 State street—Myron Hunt, architect.

Daily News building, City Hall plaza—George Washington Smith and Edward L. Mayberry, architects.

Henry Dater residence, 84 Sycamore Canyon road, Montecito—Bertram G. Goodhue, architect.

Miss Kathryn Emery residence, 5 Pomar lane, Montecito—Soule, Murphy and Hastings, architects.

J. W. Gillespie residence, 29 Para Grande lane, Montecito—Bertram G. Goodhue, architect.

J. P. Jefferson residence, Ridge road, Montecito—Reginald Johnson, architect.

W. P. Lindley residence, 197 Hot Springs avenue, Montecito—George Washington Smith, architect.

Old Santa Barbara Mission.

El Paseo buildings, 21-23 de la Guerra street—James Osborne Craig, architect.

Major J. H. H. Peshine residence, 913 San Andres street—Myron Hunt, architect.

The reasons for these selections are as follows:

The County National Bank is notable as an effort which is highly successful, to place a more aesthetic interpretation upon the mercantile architecture of our streets. Its use of the basilican or ancient law court motive refutes the commonly held notion that a building given over to commercial uses must thereby limit itself to the relatively uninteresting forms inherited from immediate precedent in American cities. It strikes a distinctly new note that we have long been waiting for and cannot too highly commend.

The Daily News building is an unusually successful solution of a building strictly utilitarian in character. It is notable for the successful arrangement of voids and solids on its facade, the happy use of color under the cornice and for the equally happy color decorations of the ceiling of the principal business rooms.

The Henry Dater place is notable for its bigness of conception, as a combined house and garden. Each is designed as a consistent unit, with the two co-ordinating perfectly. The house is also remarkable for the exquisite taste displayed in its decoration and furnishings, with special emphasis on the wonderful arrangement of colors used through the mediums of planting and Spanish tile in the patio.

The Miss Emery residence, while not following the prevailing trend of domestic work of California, nevertheless has an unusual charm and picturesqueness of line and composition.

The Gillespie residence is a building beautiful not only in its mass and interrelation of parts but in the exquisite handling of every architectural detail. House and garden are most effectively and happily married to each other. This is undoubtedly one of the great masterpieces of American garden and country house architecture.

The J. P. Jefferson residence is an example of a well balanced composition, a design of commendable restraint and dignity.

The W. P. Lindley house is particularly successful in the sustained variety of interest, as one walks through its interior.

The Old Mission is notable for its breadth of scale and simplicity of composition, which give it a quality that is seldom attained in present-day work.

El Paseo is notable for the informal novelty and interest of its plan; the incident and charm of its various parts. These buildings as a group embody to an unusual degree the romance and quality of the architectural tradition associated with the early years of California, one well adapted to this arid climate with its bright sunshine and deep shadows. There is an inspiration here that should have great effect in the development of a truly Californian architecture.

The Major Peshine residence is a very fine development of a California plan with outdoor circulation. It is also notable for the very beautiful composition of its exterior masses and the sensitive handling of its detail throughout.

The above examples, while in our opinion the most notable now to be found here, do not compass all the best architecture of Santa Barbara, which, with Montecito, is unusually rich in the number and quality of its really fine buildings. In fact, there is hardly a city of its size in America or on the Pacific Coast at least, where so many and attractive structures and gardens are to be found.

Yet three-fourths at least of all the buildings, and most of the gardens, adjoining these fine examples are, as in other cities, poorly designed, inappropriate, badly proportioned and unbeautiful. Most of them undoubtedly were constructed without competent advice from a trained architect or landscape architect. It is to be hoped that an ever increasing number of such trained men available, people generally will turn to them for help. Santa Barbarans seem to be more than usually appreciative of what is worth while, and of seeing that they get it!

Honorable Mentions

While the Jury cannot point out all the very good examples that it observed, the following seem particularly worthy of Honorable Mention:—

Carrillo building, State and Carrillo streets—Marston Van Pelt and Maybury, architects.

Joseph G. Coleman, Jr. residence, 55 San Leandro road, Montecito—Reginald Johnson, architect.

Bertram G. Goodhue residence, East Valley road, Montecito—Bertram G. Goodhue, architect.

R. B. Gring residence, Spring road, Montecito—James Osborne Craig, architect.

Craig Heberton residence, 40 Middle road, Montecito—George Washington Smith, architect.

W. E. Hodges residence, 2112 Santa Barbara street—Soule, Murphy and Hastings, architects.

Bernhard Hoffmann residence, 2420 Santa Barbara street—James Osborne Craig, architect.

J. Y. Parker residence, 1600 Paterna road—Floyd E. Brewster, architect.

George Washington Smith residence, 17 Mesa road, Montecito—George Washington Smith, architect.

Paseo de las Flores, 818 State street—Mrs. James Osborne Craig, designer.

Granada Development, Nopal and Anapamu streets—Kirkhuff and Schaaf, architects.

Five Most Notable Gardens

As the five most notable examples of gardens, the Jury unanimously selected the following in alphabetical order:—

Henry Dater garden, 84 Sycamore Canyon road, Montecito—Bertram G. Goodhue, architect.

J. W. Gillespie garden, Para Grande lane, Montecito—Bertram G. Goodhue, architect.

Craig Heberton garden, 40 Middle road, Montecito—George Washington Smith, architect.

David Jones garden, Alston road, Montecito—Abraham K. Adler, Chicago, architect.

George Owen Knapp upper garden, Sycamore Canyon road, Montecito—Charles G. Adams, landscape consulting architect for planting only. (Carleton M. Winslow, architect.)

The reasons for these selections are:—

The Henry Dater garden is essentially architectural. The succession of hillside terraces and large pool at their base form a peculiarly fitting and noble foreground for the house. The garden is also conspicuous for the restraint and simplicity of its composition.

The J. W. Gillespie garden is essentially Persian in character, consisting principally of a few well studied vistas of fine large scale and compelling beauty. The development of incidental features elsewhere in the grounds creates ample sustaining interest.

The Craig Heberton garden, being entirely enclosed, is dependent for interest upon its successful arrangement of walks and planting. It is also notable for the intimate relation established between the garden and the house.

The David Jones garden is unusually well studied and knowingly handled in its treatment of foliage to adequately frame the distant views which are here of exceptional grandeur.

The upper garden on the Knapp Estate is an example of generous large-scale formal gardening which not only has incident and charm in its various parts but which co-ordinates with and acknowledges to an unusual degree the magnificent mountain scenery closely adjacent. It forms a perfect foreground for a very beautiful mountain picture.

Honorable Mention for Gardens

The Jury feels that in addition to the above, the following gardens should receive honorable mention:—

W. E. Hodges garden, 2112 Santa Barbara street—Ralph T. Stevens, landscape architect.

J. P. Jefferson garden, Ridge road, Montecito—Paul Thieme, landscape architect.

De Witt Parshall garden, Hot Springs road, Montecito—architect unknown.

Glendessary garden, Mission Canyon—architect unknown.

Francis T. Underhill garden, Depot road, Montecito—Francis T. Underhill, designer.

David Gray garden, Alston road, Montecito—architect unknown.

Henry Bothin open air theatre, Palm drive, Montecito—architect unknown.

Five Most Notable Small Houses

As the five most notable examples of small houses, the Jury selected the following:—

R. S. Hyde beach cottage, Montecito—Carleton M. Winslow, architect.

Dr. R. M. Culler house, 2014 State street—Soule, Murphy and Hastings, architects.

William H. Parker house, 2016 State street—Soule, Murphy and Hastings, architects.

Bernhard Hoffmann's guest cottage, Mission Canyon—James Osborne Craig, architect.

John Frederic Murphy house, 707 Moreno road—John Frederic Murphy of Soule, Murphy and Hastings, architect.

In conclusion, the Jury is greatly impressed by the unusual vision and idealism indicated by the Chamber of Commerce and Community Arts Association of Santa

Barbara in their effort to catch and hold for the city the splendid architectural tradition to which it has fallen heir. The people of this city also are to be congratulated upon their obvious awakening to the value of this heritage, and to a growing realization of their unusual civic opportunity.

We feel that if this impulse is fully sustained in consequence of the rare situation and wonderful natural scenery of Santa Barbara, it may easily become the most beautiful city on the Coast.

In this connection, however, we cannot refrain from calling attention to what seems to us an outstanding fact in connection with the city's further program. Santa Barbara's unsurpassed scenic advantages, constitute a tremendous asset, which we are certain may be made to yield much larger interest than at present.

Perhaps the greatest single opportunity of the immediate future to the citizens of Santa Barbara lies in their developing for all time the large strip of coast line between the bath house and Montecito. This beautiful shore could easily become, to future generations, what the improved beach frontages are abroad in such cities as Mentone, Nice, St. Sebastian, etc., namely, the most attractive and valuable features of the world's greatest show places.

Not only should the city acquire and remove the lumber yard which is the one obstruction on its lovely beach, but also attention should be given to the ultimate acquirement of the bluffs, both eastward in front of Montecito, and westward in front of the Mesa so that eventually a fine public parkway can give access to what is one of California's finest scenic ocean fronts.

Respectfully submitted,

ELMER GREY DAVID C. ALLISON
PIERPONT DAVIS WILLIAM H. CONKLIN
FERNAND LUNGREN

* * * *

Office Buildings of the Future

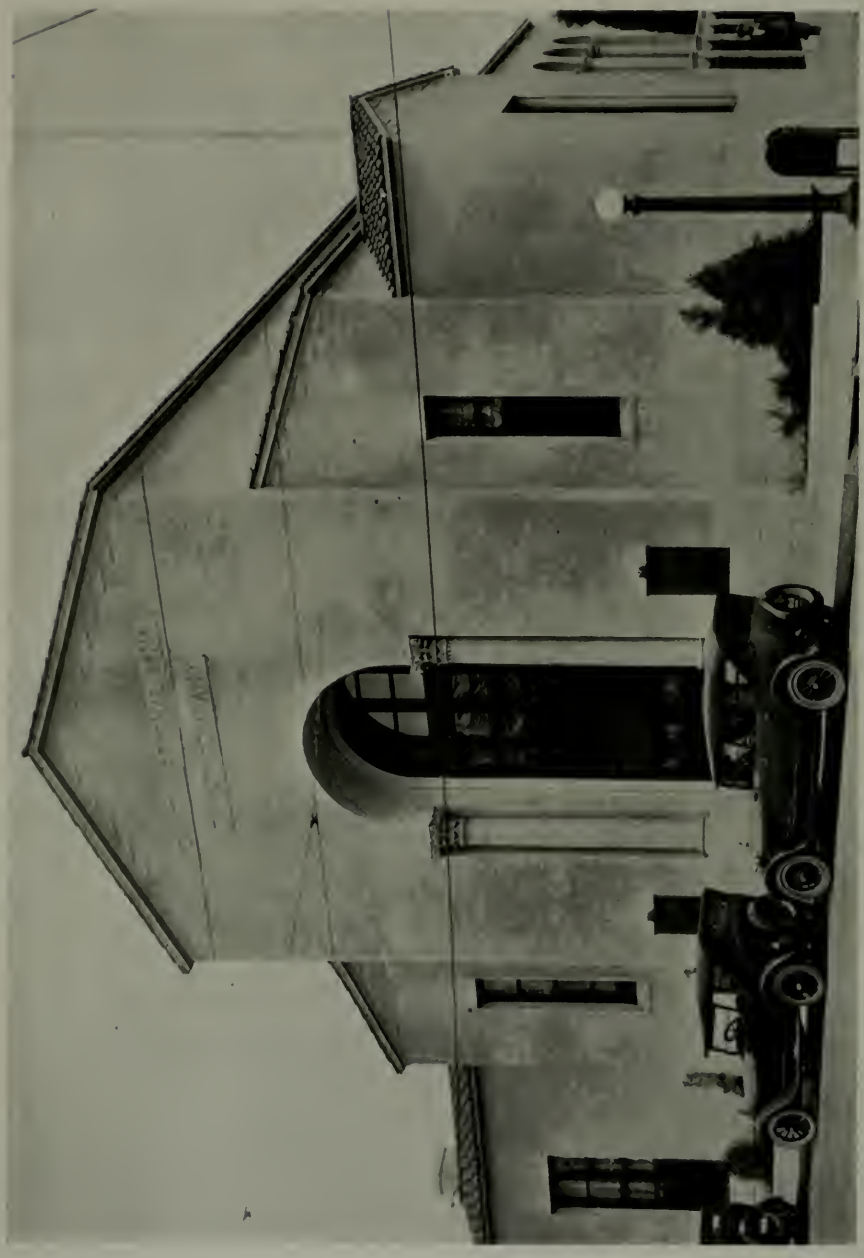
Writing on this subject, Clarence T. Coley, manager of the Equitable building, New York, in the September issue of the "Architectural Forum", has this to say:

"Future office buildings, except for special use, will be in large blocks, externally dignified, plain, of right lines and made up of standardized units of construction. The large building houses a great many business interests under one roof where vertical transportation is more rapid than horizontal travel and which tends to improve business efficiency. The grade "A" building is determined not by design and construction, but by its occupancy. It is natural for business men to desire to do business in groups of highly respected and successful men. The more such men are housed together, the easier it is to meet them. There is also a certain confidence developed because of occupancy of space in the same building. Occupancy is a testimonial from the landlord as to a man's rating, which tends to produce a good rent rate. The cost of operation per square foot of rentable area is lower in proportion to the size of the building, on account of the spread of the overhead and the possibility of doing business on a wholesale basis."

* * * *

Exhibition of American Architectural Photographs

The Metropolitan Museum of Art has placed on exhibition a collection of photographs showing in a comprehensive manner the evolution of American architecture during the seventeenth, eighteenth and early nineteenth centuries. More than two hundred photographs are shown, many of them enlarged, and all have been selected as representing the best types and styles of American architecture of what is generally termed the Colonial period.



COUNTY NATIONAL BANK & TRUST CO., SANTA BARBARA
MYRON HUNT, ARCHITECT

DAILY NEWS BUILDING, SANTA BARBARA, CALIFORNIA
WASHINGTON SMITH AND EDWARD MAYBERRY, ARCHITECTS

EL PASEO BUILDINGS, SANTA BARBARA
JAMES OSBORNE CRAIG, ARCHITECT

GARDEN OF MR. J. W. GILLESPIE, MONTECITO
BERTRAM G. GOODHUE, ARCHITECT

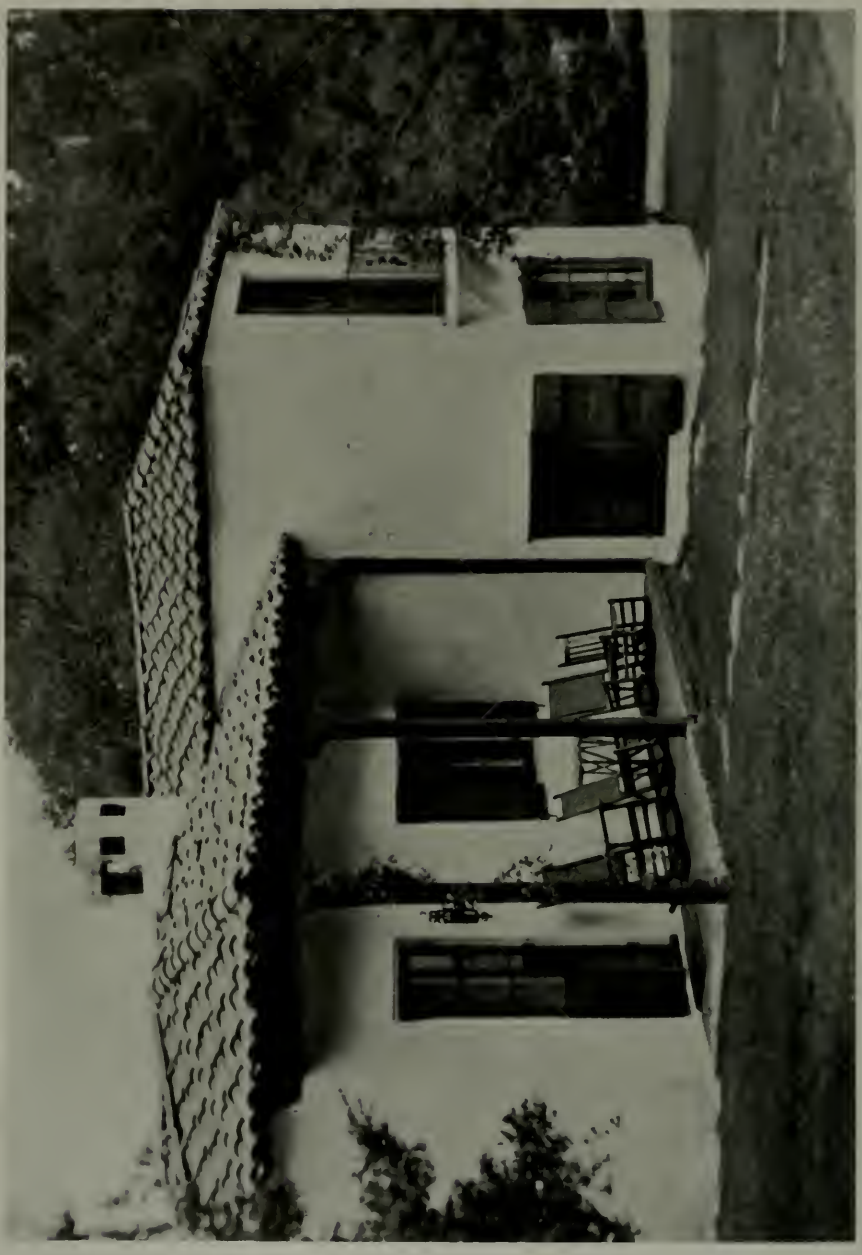
HOUSE OF MR. J. W. GILLESPIE, MONTECITO
BERTRAM G. GOODHUE, ARCHITECT

HOUSE OF MR. J. P. JEFFERSON, MONTECITO
REGINALD JOHNSON, ARCHITECT

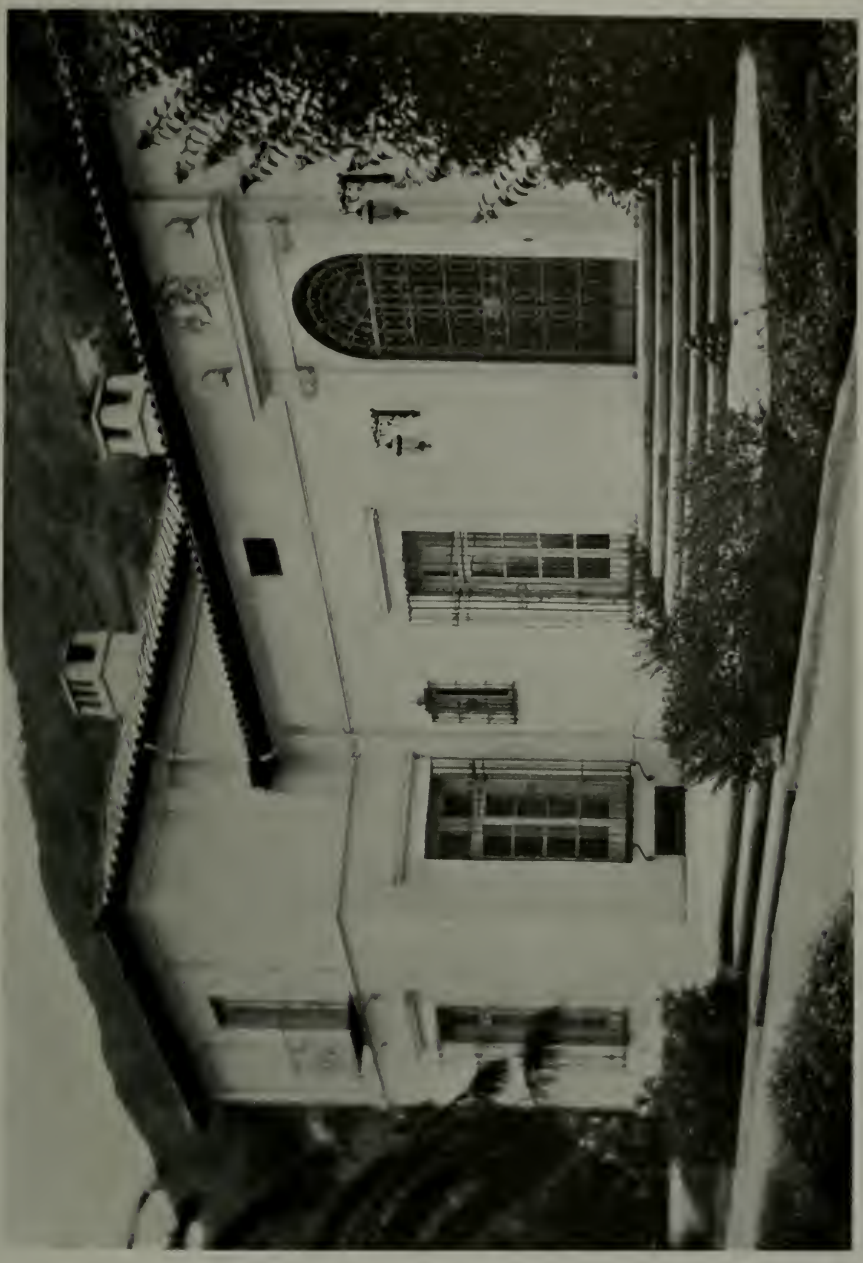
HOUSE OF MISS KATHRYN EMERY, MONTECITO
SOULE, MURPHY & HASTINGS, ARCHITECTS

Charles G. Adams, Consulting Landscape Architect

GARDEN OF GEORGE OWEN KNAPP, MONTECITO
CARLETON M. WINSLOW, ARCHITECT

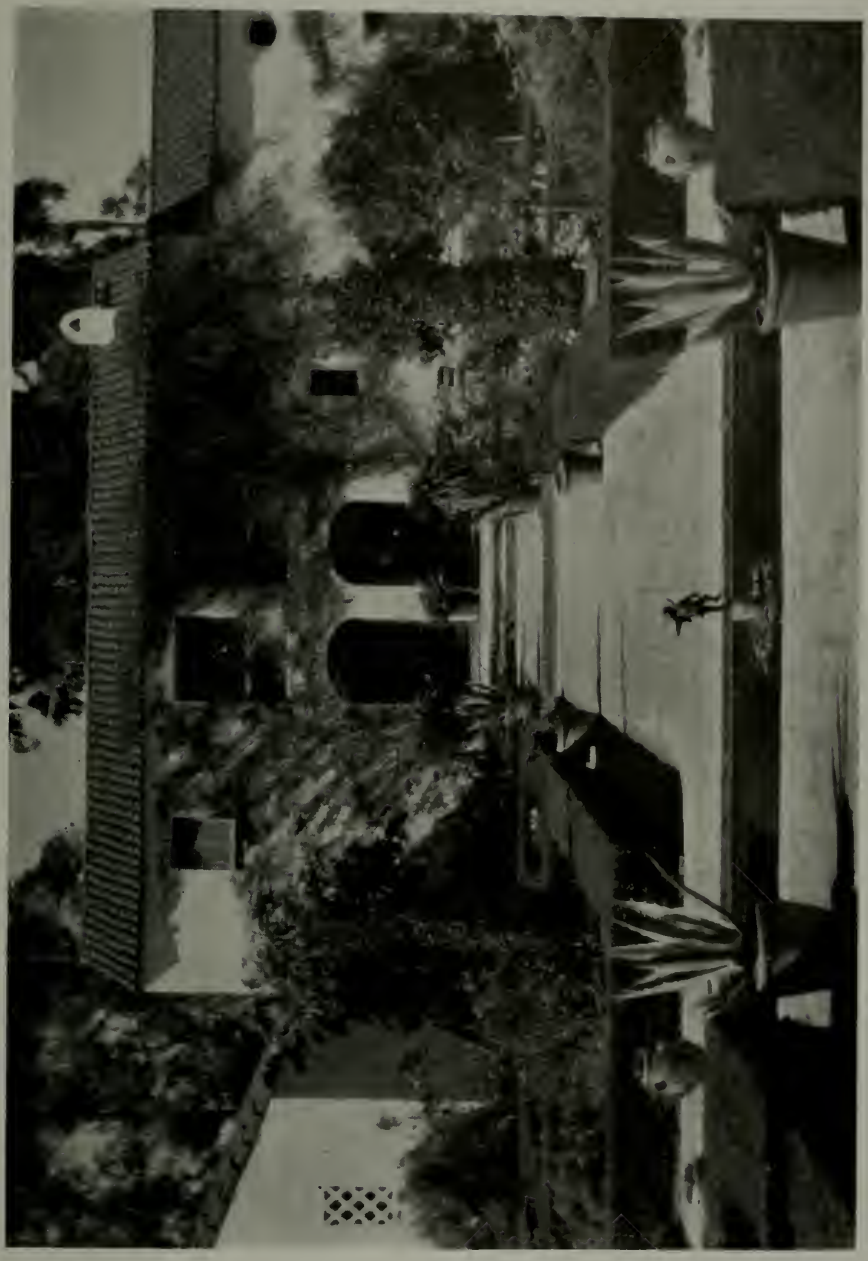


GUEST COTTAGE FOR MR. BERNHARD HOFFMANN, SANTA BARBARA
JAMES OSBORNE CRAIG, ARCHITECT



HOUSE OF MAJOR J. H. H. PESHINE, SANTA BARBARA
MYRON HUNT.
ARCHITECT

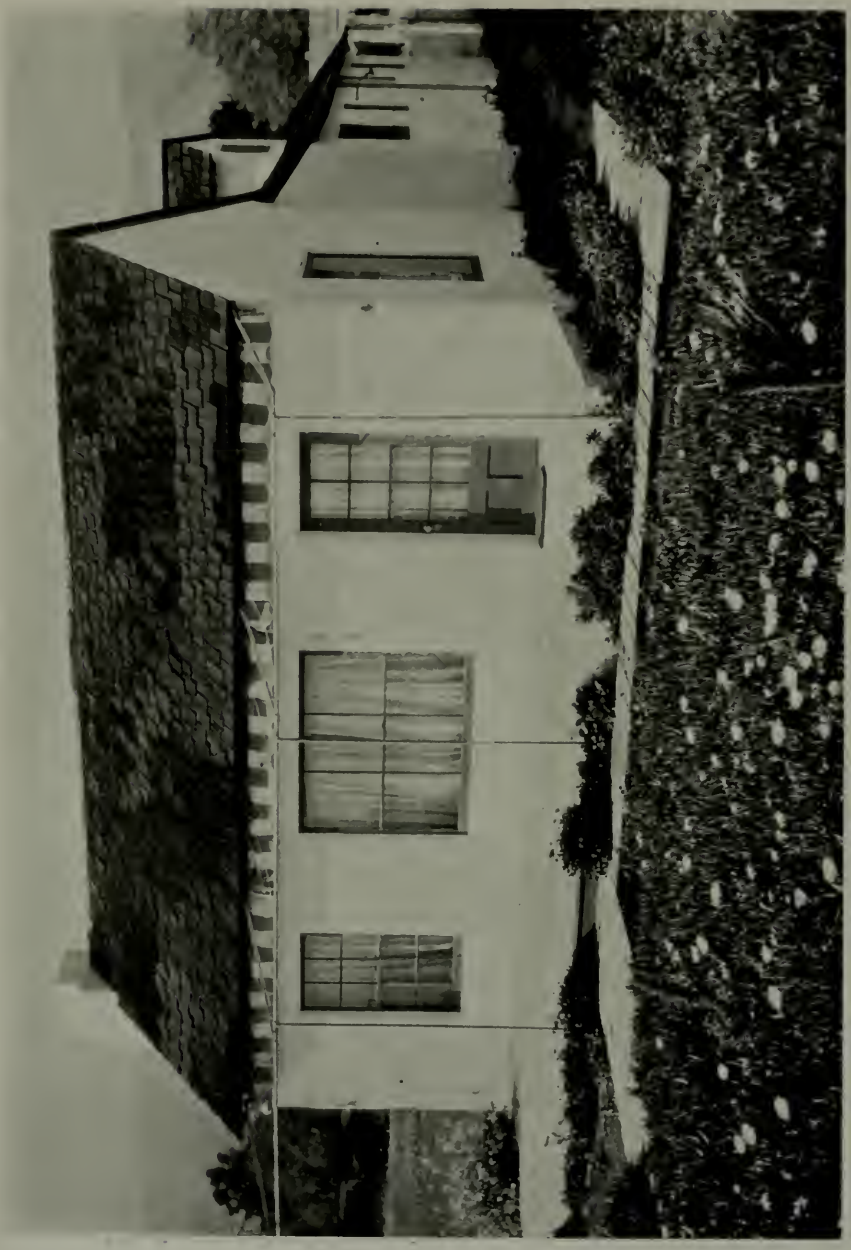
HOUSE OF MR. W. P. LINDLEY, MONTECITO
GEORGE WASHINGTON SMITH, ARCHITECT



HOUSE OF MR. CRAIG HEBERTON, MONTECITO
GEORGE WASHINGTON SMITH, ARCHITECT

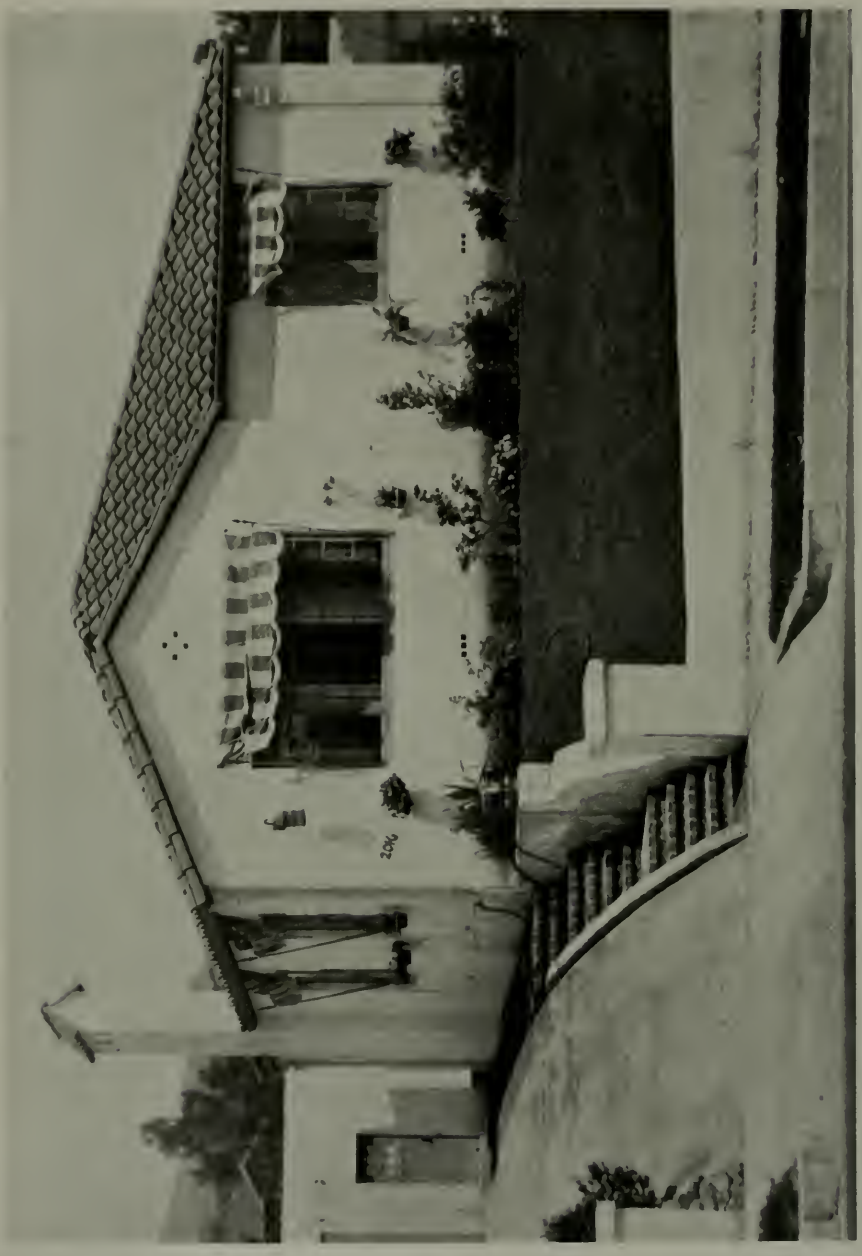
HOUSE OF MR. HENRY DATER, MONTECITO
BERTRAM G. GOODHUE, ARCHITECT

HOUSE OF MR. HENRY DATER, MONTECITO
BERTRAM G. GOODHUE, ARCHITECT



BEACH COTTAGE FOR MR. R. S. HYDE, MONTECITO
CARLETON M. WINSLOW, ARCHITECT

HOUSE OF DR. R. M. CULLER, SANTA BARBARA
SOULE, MURPHY & HASTINGS, ARCHITECTS



HOUSE OF MR. WILLIAM H. PARKER, SANTA BARBARA
SOULE, MURPHY & HASTINGS, ARCHITECTS

HOUSE OF JOHN FREDERIC MURPHY, SANTA BARBARA
SOULE, MURPHY & HASTINGS, ARCHITECTS

HOUSE OF MR. JOHN BYERS, LOS ANGELES
JOHN BYERS, DESIGNER AND BUILDER

Folk Song

By IRVING F. MORROW, Architect

PEOPLE are perverse. They habitually like the wrong thing; and when, by some quirk of chance, their attention lights upon a worthy object, it is as likely as not to be for the wrong reason. Do press agents for musical, theatrical, and literary personages dwell upon the artistic merits of their subjects? They do not. Wisdom (or indifference) tells them that artistic accomplishments, even of artists, mean nothing to the public. But genuine popular enthusiasm can be aroused by puerile and irrelevant inanities of personal gossip which (whether true or false) have no bearing whatever on the ability to play, sing, act, or write. And now I suspect that many people will be interested in Mr. Byers' houses for what seems to me precisely the least significant thing about them—namely, that they are constructed of adobe. Good architectural design is, in the public eye, a negligible asset; but sun-dried mud is a material with a romantic past.

Do not, however, mistake my attitude. The structural straightforwardness, the sincerity, of Mr. Byers' houses are qualities I am far from belittling. In an age that suspects no relation between structure and design, that unquestioningly equates architecture to furring, it is no small matter to come upon buildings which are in reality what they seem to be. Mr. Byers' is an architecture in which wood, tile, masonry —in short, all structural materials and forms—may be taken at their face value. Now this is a fact of the utmost importance, in reality far more significant than the most meticulous of academic niceties. But that the masonry employed should be of the particular kind known as adobe is what seems to me relatively insignificant; without Mr. Byers' able and enthusiastic backing * I might almost have said questionable. My own impulse would have been to say—indeed, I believe I have already elsewhere said—that bricks of sun-dried mud were well enough in the days when conditions afforded nothing better, but were not to be taken seriously in the face of materials of superior hardness and strength offered by modern industry. Yet here is Mr. Byers, plainly a sensible man and an able craftsman of considerable experience, who urges that adobe properly made and erected is as sound and durable as can reasonably be desired. In fact, in the face of his enthusiasm and his obvious knowledge of what he was talking about, I somehow omitted to mention my objection; and not entirely through politeness, either. So I admit I may be wrong. It is possible that the popularizing of economical construction in a heavy, fireproof, insulating, and esthetically attractive material way may be a public service of great moment.

But for all that I still contend that the adobe is not the most significant aspect of Mr. Byers' achievement. This phase leaves me cold, even if convinced. But I respond with a positive thrill to an architectural design totally devoid of virtuosity and sophistication.

We architects know too much and feel too little. An uncritically accepted decorum submerges our emotions and sets our intellects in the

* In the Architect and Engineer for April, 1922 (Vol. LXIX, No. 1, pp. 47-57), Mr. Byers gives a clear and illuminating explanation of the methods of adobe construction. I should also add that, in personal contact, his enthusiasm is infectious.

NOTE: The photographs of Mr. Byers' own house are by Mr. William Polk Hellen.

saddle. Design ceases to be a matter of spontaneous expression, and becomes one of laborious calculation and compilation. We are too self-conscious. Solicitude for what other people may think stifles any effort to plumb the depths of our own thoughts. Our works therefore fail to ring true. They are artistically immensely accomplished and socially quite insignificant. This fact alone is a damning indictment; that there is hardly a city in the land which contains a building that might not equally well be in any other city. Our achievements are consummate and characterless. In the face of such a situation it is an incomparable

FIRST FLOOR PLAN, HOUSE OF MRS. H. M. GORHAM, AND MISS MARIE HALLIDAY, SANTA MONICA
John Byers, Designer and Builder

inspiration to come upon architecture conceived in spiritual joy and technical ignorance.

Do not misinterpret me. I am not literally accusing Mr. Byers of deficient education. He doubtless knows as much about periods and styles and orders as the best of us. The important thing is that you would never guess it from his work. His buildings are replete with a delicate and elusive charm; and this charm, when run to ground, is found to proceed from just those sorts of apparently minor vagaries which the academic architect, even when he conceives them, dismisses as unworthy of real work. His design, therefore, lacks "seriousness",

but preserves that ineffable aroma known as "bouquet". To the academician it is negligible; to the sensitive soul it contains all that is really worth while—joy, freshness, spiritual integrity. This is what I mean in welcoming an architecture which proceeds from the heart rather than from the head, unconcerned with precedents and academic trappings. It is a profound relief to encounter designs conceived in a healthy ignorance—or contempt—of what has been said and done. Our greatest need is not architects with better training; we are fed up on training; we want more sensitiveness.

SECOND FLOOR PLAN, HOUSE OF MRS. H. M. GORHAM AND MISS MARIE HALLIDAY, SANTA MONICA
John Byers, Designer and Builder

Perhaps I can make my attitude clearest by analogy. When I return home of an evening from the office, I find my greatest relaxation in music; and the dictates of whim and a rather catholic taste lead me through all styles and periods—primitives, classicists, romanticists, moderns, futurists; Italian, French, German, English, Russian, American. Yet ever so often the spirit impels me to turn from the music of sophisticated art, and I put aside Bach and Mozart and Beethoven and Schumann and Brahms and Debussy and Stravinsky and Schonberg and the rest, and take out a volume of folk songs.

Mr. Byers' houses affect me like folk songs.

HOUSE OF MRS. H. M. GORHAM AND MISS MARIE HALLIDAY, SANTA MONICA
JOHN BYERS.
DESIGNER AND BUILDER

HOUSE OF MRS. H. M. GORHAM AND MISS MARIE HALLIDAY, SANTA MONICA
DESIGNER AND BUILDER
JOHN BYERS.

STUDIO, HOUSE OF MRS. H M. GORHAM AND MISS MARIE HALLIDAY, SANTA MONICA
JOHN BYERS, DESIGNER AND BUILDER

HOUSE OF MRS. H. M. GORHAM AND MISS MARIE HALLIDAY, SANTA MONICA
JOHN BYERS, DESIGNER AND BUILDER

HOUSE OF MRS. H. M. GORHAM AND MISS MARIE HALLIDAY, SANTA MONICA
JOHN BYERS, DESIGNER AND BUILDER

LIVING ROOM, HOUSE OF MR. JOHN BYERS, LOS ANGELES
JOHN BYERS, DESIGNER AND BUILDER

HOUSE OF MR. JOHN BYERS, LOS ANGELES
JOHN BYERS, DESIGNER AND BUILDER

HOUSE OF MR. JOHN BYERS, LOS ANGELES
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HOUSE OF MR. JOHN BYERS, LOS ANGELES
JOHN BYERS, DESIGNER AND BUILDER

HOUSE OF MR. HARRY R. JOHNSON, LOS ANGELES
DESIGNER AND BUILDER
JOHN BYERS.

LIVING ROOM, HOUSE OF MR. HARRY R. JOHNSON
JOHN BYERS, DESIGNER AND BUILDER

HOUSE OF MR. ARTHUR ROSSON, BEVERLY HILLS
JOHN BYERS, DESIGNER AND BUILDER

HOUSE OF MR. EARL GILMORE, HOLLYWOOD
JOHN BYERS, DESIGNER AND BUILDER

HOUSE OF MR. EARL GILMORE, HOLLYWOOD
JOHN BYERS, DESIGNER AND BUILDER

HOUSE OF MR. H. H. FULLER, LOS ANGELES
JOHN BYERS, DESIGNER AND BUILDER

Simplified Plumbing and Heating in Inexpensive Homes for Industrial Communities

By STEPHEN CHILD*

IT was the writer's privilege to spend portions of the summers of 1920-'21 and '22 in Europe helping forward the work of an International Civic Documentation Organization as to which a word may be of interest. With headquarters in Brussels and "Centres" organizing in Paris, London, Amsterdam, Dusseldorf, Rome, Washington as well as in many other countries, there is forming what will become in effect an international **clearing house of civic information.** From all over the world, contemporary information, of all kinds, relating to civic affairs is being collected, briefed, classified for convenient use and distributed to all progressive cities, as well as organizations and individuals interested in civic advance.

During 1920, in connection with the above work, it was my good fortune to visit Holland with a party of housing and town-planning experts;—in 1921, with a similar group German conditions were studied and in 1922 under like circumstances Italy as well as France and England were visited. There has therefore been particularly good opportunity for studying recent housing and town-planning conditions in all these countries and while the story, in these respects, for England, France, Belgium, Holland and Germany has already been told, (the author prepared a series of articles on the experiences in these countries that appeared in the American City in 1921 and 1922, also in Landscape Architecture Quarterly in the same years), so little has been mentioned of Italy that a few words may be in order.

Except for one or two projects near Milan and Rome, neither the housing or town-planning effort of Italy has been particularly notable. In fact most of their recent work has been apartment houses,—reasonably fireproof to be sure, but merely first class tenements. In some cases these are five stories high, with no elevator and while grouped about more or less ample courts,—far too crowded to meet modern ideals.

We found that the newspapers were making much more fuss over the Facisti factional trouble than the majority of the citizens. The writer was assured at that time, (September, 1922), that the foreign press had much exaggerated the matter but that nevertheless it would no doubt be best for the country to abandon the policy of rigorous repression of this Facisti group and give them as our saying is "a little more rope" with the idea that recognition of this sort and the responsibility of office would modify their extravagant demands. More recent events seem to justify this assumption for a cabinet with representatives of the four principal political parties and including the much beloved General Diaz for Secretary of War will not go very far astray.

While recent European effort at town planning, their garden cities, garden suburbs and new allotments offer some interesting features, on the whole it would seem that the phase of their present-day work most useful to us is their housing, particularly housing for the laboring man, —inexpensive dwellings, "habitations á bon marché" as they are commonly called.

Except for the tenements of Italy above noted, the greater part of this industrial housing consists of very attractive homes, often to be sure in rows but often, too, semi-detached or detached cottages, seldom

*Landscape architect and consultant in City Planning, Merchants Exchange Building, San Francisco.

over two stories in height and remarkably well built and equipped. This is something we are not doing in America. We are helping our clerks and our middle-class people to better homes but when it comes to the laboring man we are told "he must continue to occupy the cast-off houses of the better-paid". The writer objects to this dictum, which entails the continued production of slums. Why can we not have more new inexpensive homes for our working people?

In Europe **mass production** (projects of from 300 to 3,000 homes are not uncommon) implying of course **wholesale purchase of supplies** at low prices and accompanied by **standardization of parts**,—all of these factors help, but the simplified methods of heating and plumbing noted in all these countries are also very important.

One of these methods is aided by the fact that comparatively few of these houses for working people have cellars. This fact is an important element of economy in house building. If there is any cellar at all it is small and only extends under a part of the building and does not interfere with the laying in the ground under the concrete and tiled first floors of the houses,—not expensive cast iron pipe,—but the much cheaper vitrified clay sewer pipe. These pipes are laid in shallow trenches covered with concrete directly to the plumbing fixtures themselves,—the W. C. and the kitchen sink. Often the W. C. is in a small outbuilding separated by a paved open space perhaps a yard in width from the house itself. The out-building frequently has a larger compartment for coal and wood storage.

As to bathrooms, these are seldom upstairs as is so common with us, and in fact very seldom do they use for such houses the expensive porcelain-lined tub. The most common method is to build a brick, cement-lined alcove-like space a little less than a yard square, either opening from the kitchen or adjoining the kitchen and entered from the passageway. This is provided with a shower-bath sprinkler overhead and with properly arranged drain outlet at the floor level.

Often the sprinkling is accomplished by means of a specially constructed pail holding two or three gallons and having a valve and sprinkler attached at one side near the bottom. The pail can thus be filled with water and warmed on the kitchen stove. A hook correctly placed in the ceiling of the alcove brings the sprinkler over the bather's head. The pail, filled with warm water, is attached to the hook, the valve opened and the shower bath accomplished. This shower bath alcove has no door but a rubber-lined curtain, and a most interesting feature is the fact that a brick wall one brick in thickness extends across the front side up to a height of about 2½ feet. Grownups, therefore, step over this wall, draw the curtain and have their shower-bath. But the outlet pipe can be closed and this space, perhaps 30 inches square, can be filled to a depth of 2 feet or more with warm water for bathing the "bambino" or for soaking clothes.

With no cellar, heat is supplied by stoves of various kinds or by small, coal-burning open grates. The method quite generally employed is a kitchen stove and a small open grate in the front or living-room with perhaps one such grate in one of the rooms on the floor above.

Recently, however, some very clever adaptations of the "Poele Russe" (Russian stove) have been perfected and introduced in Germany, Belgium and to a certain extent in England. This is really a glazed tile stove with grate for burning coal, charcoal or coke* and a small oven

*Oil or gas burners could readily be employed.

for cooking food, but the distinctive feature is the arrangement for conserving the heat. This, after warming the oven, passes to a clever arrangement of flues which conduct the heat up and down three or four times in the height of the first floor rooms before allowing it to go out the chimney. This is accomplished by sections of glazed tile set one above the other from tiled stove to ceiling. The outfit comes in gray-white, cream or brown surface and is quite attractive. It is so placed in the house that while the stove is in the kitchen or kitchenette, the back of the tiled flue superstructure shows in the adjoining room. In some types the portion that shows in the front room—the living room—is arranged to form a broad tiled seat—in effect a "cozy-corner",—with rug and pillows a very attractive one, and with the warm tile base and back particularly comfortable.

Some of the advantages of this arrangement are that the heat from the stove ascending and descending in these cleverly arranged flues, warms thoroughly the heavy tile structure which holds its heat for a long time, distributing it into the rooms. Arrangements are made for hot water heating by means of a tank similar to our overhead kitchen water tanks but smaller. The tank can rest upon the top of the structure if desired.

By the simple method of omitting or adding intermediate tile flue pieces, the structure can be adjusted to any height of room or may in fact be extended up into the second floor rooms. The top and bottom sections are the only ones that differ in internal arrangement. Directions accompany the material and it is possible for an ordinary bricklayer to easily set it up. The whole structure is so strong that the chimney flue starts directly from the top and goes on out through the second story rooms and the roof.

In the summer time a damper or valve permits the heat to go directly up-chimney so the house is not overheated,—for a more complete description of this interesting outfit see the Belgian publication "L'Habitation á Bon Marché" for July, 1922, page 175, also the November, 1922 number of the same publication, pages 273-276, from which the illustrations are taken.

As far as known, there is nothing to prevent the manufacturing in America of the stove here described and illustrated or at least some appropriate adaptation of it and the idea is herewith freely presented to any enterprising manufacturer of tile products interested. Furthermore, believing that the introduction of such a stove would help the industrial population of the south and southwest to secure less expensive heating arrangements and therefore stimulate the erection of more and better homes for laboring people, a much-to-be-desired result, which the writer would only be too glad to help forward, he is quite willing to freely cooperate with any such manufacturer in regard to the interpretation and elaboration of the plans.

An interesting detail noted in Italy is the out-of-door laundry facilities. Mention has been made of the many tenement houses with more or less ample open courts. While each tenement has a small kitchen with cook stove and sink and also nearby a W. C. and simple bathing arrangements, almost none have laundry facilities. In the courts, however, there are attractive-looking tiled roof shelters with well-designed supporting concrete columns. These cover sets of ten or twelve concrete laundry tubs. Warm water is furnished from a boiler in a small house adjoining the shelter and the tenants bring their soiled clothing down here and wash it out-of-doors.

While not many of the above methods may be practical in the colder northern parts of the United States, for great areas of this country, in the South, or Southwest and in California the simplified methods of house-building mentioned earlier, the absence or curtailment of expensive cellars, and the far less expensive plumbing and heating, here described, are completely adaptable and should help solve the housing problem for laboring people in these districts. Almost anywhere south of Washington many of these methods could be employed to great advantage.

* * * *

Will We Build for an Air Travel Era?

SINCE city planning became a recognized part of American life in general and American building in particular, some very wise and not a few foolish moves have been made by professional and lay men to regulate the size, the height, the nature, and other features of buildings in the larger cities of the land, and especially the buildings in the more congested sections of those cities. One of the latest ideas for building regulation was propounded by Mr. G. R. McKay, Cleveland, Ohio, before the convention of the National Association of Building Owners and Managers at Colorado Springs, Colorado:

"The time is not far distant when city skyscrapers will have to provide a landing place on their roofs for aeroplanes or passenger dirigibles. If I live long enough, I expect to see height limits of cities made uniform for the business district, which would require the builder to build up to that limit instead of telling him that he can build no higher than a certain limit. Thus the business district will present a flat appearance to the airman to make landing easier. Possibly girders will be flung across streets for connecting bridges, so that a portion of the district will be an ideal landing field.

"We must recognize that air transportation is coming, and that some day it will be as common as motor transportation is today. The speed at which Americans feel they must do business puts suburban landing fields out of the question. Delivery of passengers must be made close to the business district."

* * * *

Lamps Express Personality of the Home

THERE was a time not many years ago when a lamp in the home was a luxury. Now, however, lamps are considered a necessity in the proper decoration of a room, whether it be formal drawing-room or frivolous boudoir. Not one, but several, is the mode, of various sizes, shapes, colors and kinds and for uses both practical and ornamental. Lamps in a great measure may be said to express the personality of the home which they decorate.

* * * *

Home

A hearth, a rafter,
And love, and laughter,
And heaven thereafter.

FIG. 5.—INTERIOR SULPHUR DIOXIDE BUILDING ASSOCIATED OIL COMPANY, AVON, CALIFORNIA

New Type of Concrete Construction Provides Large Open Areas at Minimum Cost

By FREDERICK HAMILTON

IN this number are shown several views of a group of rigid frame concrete structures recently completed by the Associated Oil Company, L. D. Jurs, chief engineer, at their Avon, California, plant. It is interesting to note that this type of construction was adopted not only on account of its fireproof qualities but because of the possibility of large unobstructed areas at a cost well within the company's appropriated funds.

Figure 1 shows the exterior of the Edeleanu plant and Figures 2 and 3 show skeleton sections through this building which is 122 feet wide by 110 feet in length.

Figures 4 and 5 show the Sulphur Dioxide plant. This building is 30 feet high and has a clear span of 36 feet. The bents are spaced 18 feet 9 inches centers.

Figure 6, another view of the Sulphur Dioxide plant, shows the building during construction. A one to four concrete mixture was used for these buildings and the forms, except for the studding, were stripped within three days after concrete was poured.

The Engineering Department of the Associated Oil Company prepared the plans for the Edeleanu and Sulphur Dioxide buildings, the structural engineering being in charge of Villadsen Brothers, Incorporated, who were also the builders.

An interior of the office building, with clear spans of 45 feet across the second story, is shown in Figure 7. Wolley and Evans were the architects. This office is located close to the refinery and it was therefore important that it be fireproof. It was also desirable to have clear spans above second floor to permit of future development and rearrangement of rooms. The entire building, including walls, floor and roof slabs is concrete.

All these buildings were designed for a live load on roofs of 25 pounds per square foot. The working stress in the concrete was taken at 750 pounds per square inch and in the steel at 16,000 pounds per square inch.

It is evident that the rigid concrete frame has a number of advantages in many structures over other types of construction. By taking advantage of the rigid feature permissable in concrete, much material can be saved and at the same time the desired results may be obtained from theoretical, structural and artistic viewpoints. The design is capable of exact calculations, resulting in economical distribution of materials used. This rigidity aids materially in the factor of safety of the structure and gives security against horizontal shocks caused by winds and seismographic disturbances.

From our observation it would appear that architects realize the esthetic possibilities of this type of construction and are taking advantage of it in designing some of their work. On account of the plasticity of concrete practically any shape desired can be used and the structural frame may be exposed and incorporated into the design. This is exceptionally desirable for such buildings as auditoriums, public markets, train sheds, etc.

FIG. 1.—(Top) EDELEANU BUILDING FOR ASSOCIATED OIL COMPANY, AVON
FIG. 7.—(Bottom) INTERIOR OFFICE BUILDING, ASSOCIATED OIL COMPANY

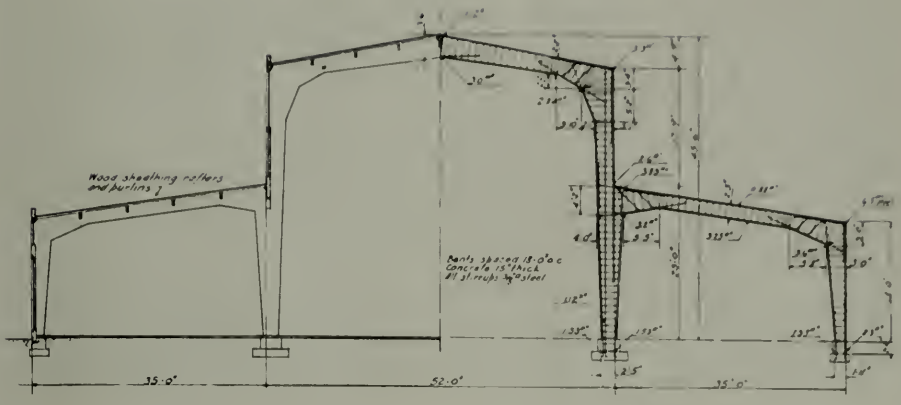

FIG. 2.—SECTION THROUGH CENTER OF EDELEANU BUILDING, ASSOCIATED OIL CO., AVON, CALIFORNIA

Villadsen Bros., Inc., Construction Engineers

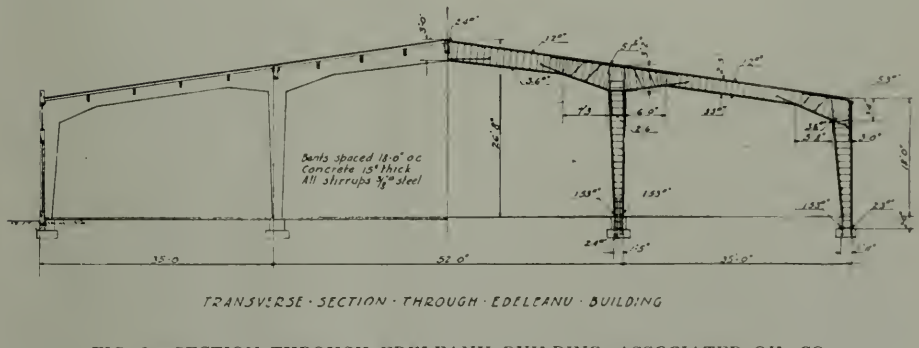

FIG. 3.—SECTION THROUGH EDELEANU BUILDING, ASSOCIATED OIL CO., AVON, CALIFORNIA

Villadsen Bros., Inc., Construction Engineers

FIG. 6.—CONCRETE FRAME, SULPHUR DIOXIDE BUILDING, AVON, CALIFORNIA
Engineering Department, Associated Oil Company

FIG. 4.—SULPHUR DIOXIDE BUILDING, AVON, CALIFORNIA
Villadsen Bros., Inc., Construction Engineers

Street Planning and Research

By CAROL ARONOVICI, City Planning Consultant

Mr. McCant's article, published below, presents a number of interesting aspects of the problem of traffic congestion now confronting our large cities. The paper is based upon actual study of conditions in San Francisco and for this reason has a special value. There are, however, in this question of traffic congestion, some statements which may be called into question when considered, not from the point of view of a transportation agency, but from the viewpoint of city planning as a whole.

While it is no doubt true that tall buildings pay and that there is no real limit to the heights when below 30 stories, the experience of New York has shown that the tower buildings do not pay a reasonable return on the investment and that their main value is to be found in their service as an advertising medium. This is certainly true of the Singer and Woolworth buildings.

High buildings which do not bear a direct relation to street widths are bound to develop into costly slum areas where light and ventilation are at a premium and thereby rental values in the lower stories are bound to be reduced.

Regarding transportation, I would say that there is no difficulty in solving the problem if we eliminate vehicular traffic from the congested high building streets, but this does not seem to be in accord with the modern trend and automobiles must be considered as a basic means of transit, even to the exclusion of the usual street car service. It would be of great financial benefit to the transit companies to exclude vehicular traffic from congested districts and encourage high buildings. It would mean heavier and slower traffic, but shorter distances as is pointed out in the article in question.

I believe, however, that restriction in building heights, a distribution of traffic by proper planning of arterial streets and the providing of connecting links in the highway system will be more in harmony with the modern needs and more economical from the point of view of the community as a whole than congestion and high buildings with motor traffic excluded. The automobile is a centripetal force in the distributon of business and residential areas and every plan that we have so far found to harmonize with human society points in the direction of eliminating, elevating and placing underground the transit lines and of motoring all short lines to meet the needs of a closer relationship between the objective and the fast line terminals.

At any rate the discussion contained in this article opens a very important set of questions and avenues of investigation that every city should consider from the point of view of necessary local research along the lines of future planning.—CAROL ARONOVICI.

* * * *

Tall Buildings and Traffic Congestion

By M. McCANTS

The Hen or the Egg?

THE problem of the casual relation between tall buildings and traffic congestion is reminiscent of the old, old query, "Which came first, the hen or the egg?" Certainly either one has contributed greatly to the existence of the other, but to determine accurately the amount of influence irrespective of all other influences is a most baffling problem.

Among the various causes which have contributed to the construction of sky-scrapers, the one deserving of first mention is rapid transportation. It is hardly conceivable that men would be willing to travel from their residences to their distant downtown high-perched offices, if they were compelled to use the slow-moving means of transportation of a hundred years ago.

Another factor contributing to the erection of tall buildings has been the use men have learned to make of structural steel. And still another factor has been the invention of the passenger elevator. All three of the foregoing factors might be termed mechanical; and interesting though they may be, they do not stir one's imagination nearly so much as do the human motives that lead to the building of these lofty structures.

Take first the motive of the owner. He knows that the taller the building the greater the proportionate return on his investment. A recent study of a very large number of office buildings located in forty of our principal cities revealed an unmistakable upward trend of net profit as the height of the buildings increased. There was no falling-off in this upward trend of profit. It was thought, however, by the investigators that the point of maximum returns might be reached somewhere above thirty stories; but even this was only conjecture. Apparently the sky is truly the limit so far as concerns the most profitable height for office buildings in large cities.

In the study just cited the average ratio between the value of the buildings and the value of the sites was one and twenty-nine hundredths. To illustrate this condition by a hypothetical case, it was found that on land worth one hundred thousand dollars an office building was erected worth one hundred twenty-nine thousand dollars. The valuation figures are those of the various city assessors.

Assuming that this study has discovered a natural law for the proper ratio between building values and land values, one would be forced to conclude that as land values increase the height of the buildings should increase; otherwise the land would be under-developed. And it should not be forgotten that land values are greatest where the largest number of people go. Hence it would naturally follow that increased traffic congestion **should** lead to higher buildings.

Consider next the most important factors of all—the motives of the occupants of these tall buildings. Are they attracted by the majesty of height? Do they seek an unobstructed view? Is better light the attraction? Or is it simply more profitable to be located in the region of the sky-scrapers? I raise these questions but I cannot answer them with the assurance born of exact knowledge. Probably, all these motives and many others operate actively. However, the fact remains that the higher the building the higher the rent which tenants are willing to pay. So much for the causes of high buildings; now for the effects.

One of the most prominent apparent effects of tall buildings is an increase in congestion, for the higher the buildings the more space contained and therefore the more people who will visit them by foot, by street car, or by auto. However, it might be better to call increased traffic congestion not the effect of tall buildings; nor yet a cause of them; but rather an accompaniment. Suffice it to say that the two always go together. But another effect which may more than compensate for the congestion, is that of making it possible to do more business in a day's work; if this is not a proved fact it is a probability suggested by a host of evidences, and it is deserving of serious thought on the part of all who would seek to limit the height of buildings.

There are other effects of tall buildings which have no direct bearing upon traffic congestion but which are so important that they must be considered in this connection. The first is the effect upon lighting; tall buildings certainly do cut off the light; and there is no substitute for daylight—as every office-worker will testify. Regardless of any economic advantages to be gained by sky-scrapers, if they mean practically the elimination of natural daylight they should absolutely be

ruled out as inimical to public health. However, it is possible to provide for proper lighting and still allow for high buildings, as will be pointed out later.

Further bad effects of tall buildings are the increased difficulty of ventilation for the lower stories; and an increased hazard for the upper stories in case of fire, through the difficulty in throwing streams of water.

There are still other effects, of course, but they will not be touched; instead, let us consider ways and means for handling the problems of high buildings and traffic congestion in the future.

First, how tall should buildings be permitted? London has a limit of eighty feet with allowances for spires, steeples, etc. On the other hand, New York City fixes no specific limit; instead, the measure passed in 1916 provides that no building shall rise vertically more than one and one-fourth times the width of the street it faces. There may be additional stories but they must be so "stepped-back" (or terraced) that a diagonal line drawn from the far side of the street to the edge of the first step-back can be prolonged without obstruction. Already a new style of architecture is appearing in New York City as a result of this measure; it is quite pleasing to the eye, but what is far more important —it allows ample natural illumination for the streets and for the windows facing the streets.

Such a measure would be valuable for any large city. Here in San Francisco the class B buildings—that is, reinforced concrete structures —are limited to ten stories, while the class A buildings have no limitations as to height and no provisions for terracing. If we were to duplicate the New York City measures, a first height of one hundred fifty feet along Market street would be permitted, which is approximately twelve stories for office buildings. In this connection it should be stated that at the present time the average height of the building line for Market street between the Embarcadero and Ninth street is slightly under five stories—4.95 to be exact. The variations from this average height are large and numerous; there are several one-story structures representing one extreme, and some very tall buildings representing the other—these latter being considerably in excess of one hundred fifty feet. If one and one-fourth is the proper ratio between the first-line building height and street width, we should not delay promptly to enact the proper measures for our future public health.

It is not the purpose of these remarks to state or to imply that limiting the height of buildings is advisable for the purpose of avoiding traffic congestion. Some persons attempt to prove that since certain European cities have low buildings and have also no traffic congestion, therefore the latter is the direct effect of the former; they do not stop to consider the fact that the average European pocket-book does not permit the ownership of an auto and the purchase of sufficient gasoline to propel it to and from the owner's daily work; there are also other pertinent facts which they have not considered in attempting to discover the reason for no traffic congestion.

The city of London, with its limit of eighty feet and with its comparatively small number of private autos has, nevertheless, some very serious traffic difficulties. Wherever people come together there is a crowd, and moving crowds make for some degree of traffic congestion, and the problem always is how to regulate the congestion so as to allow the most effective play for human enterprise. The greater the population the greater the traffic and at an accelerated rate. In fact, the analysis of population data and of traffic data for our large cities over

a long period of years indicates clearly that the latter increases in a geometrical ratio to the former; that is, when the population doubles, the traffic quadruples; when the population trebles, the traffic is nine times as great; and so on.

Such a conclusion puts a considerable strain upon one's imagination, especially as regards the future, but facts are facts. Not all cities have followed this law closely, but the great majority have done so. The fact that this so-called "law of squares" has been approximately in the past with four different methods of motive power, indicates the reasonableness of the conclusion that we may expect it to hold good for a considerable future period.

Applying the "law of squares" to San Francisco and assuming that our population will increase at least one-fourth in the next ten years, we must expect an increase in traffic of more than one-half. The increase in traffic will be less than one-half in the outlying districts; and far more than one-half in the business center, for the amount of traffic varies inversely as the distance from the business center.

How shall we meet this problem of increased traffic? Shall it be by limiting the height of buildings? Possibly I can throw light on this last question by asking another question: If the distance on Market street between Ninth and the Embarcadero were only half so great and the buildings were ten stories high instead of five as they now are, would it take any longer for a street car or an auto to go through the district? The answer to this question would certainly help clear up the problem of how serious traffic congestion really is. We should not be so much interested in the **distance** that must be traversed in order to carry on our business as we should be in the **time** and the **cost.** It may be more profitable to go slowly for six blocks than to go more rapidly for twelve blocks. Modern business with its tall buildings involves two varieties of traffic—vertical and horizontal; that is, travel by foot, by street car and by auto; and travel by passenger elevator. We need extensive research into all the transportation facilities of a modern city for at the present time we certainly cannot say positively just what is the proper balance between height of buildings, width of streets, width of sidewalks and all the rest.

We have heard of triple-decking Market street; we have heard of the immediate need for subways and elevated railroads. I might go on and enumerate other proposals: Elevated sidewalks; arcaded sidewalks, that is, sidewalks set back under the edge of buildings in order to make the streets wider; underground pedestrian tunnels for crossing our streets; elevated safety aisles to cross our streets; widening the streets. In fact, every sort of scheme doubtful as to its desirability, but certainly not doubtful as to its high cost.

In considering any one of these proposals the criterion should be the economic and social good to be derived in proportion to the cost. Take the subway for example: Is it profitable to build a subway system at a cost of at least five million dollars per mile until we have utilized our streets to the greatest advantage? The answer must, of course, be in the negative. But next, we must consider whether the possibilities of our streets actually are being utilized fully and most advantageously.

On Friday, March 14, 1924, I had a very careful check made of the street cars and autos leaving the business district between 4:00 p.m. and 6:30 p.m. Ninety-two per cent of the vehicles were autos and the remaining eight per cent were street cars. Yet the 92 per cent which were autos carried only eighteen and a fractional per cent of the people. Analyzing the figures further, it was found that each auto passenger

occupied fourteen times as much linear street space as did each street car passenger, which is a very important fact inasmuch as uncontrolled auto traffic interferes greatly with street car traffic. To illustrate the unfairness of the situation let me cite the instance of an old Chinese chair-mender.

Often one can see him trudging up Market street about seven-thirty in the morning carrying two newly-mended chairs suspended at opposite ends of the pole which is balanced on his shoulder. Probably no complaint is made against him, for there are few pedestrians on the sidewalks at that time of the day, and even more important—there is only one Chinese chair-mender. But if eighteen per cent of the pedestrians were Chinese chair-menders and if such occurrences took place at all hours of the day, it is absolutely certain that the city authorities would be overwhelmed by the most violent protests from every quarter of the city. Prompt steps would be taken properly to control the delivery of chairs by the chair-mending profession.

But suppose the chair-menders should object and say that the proper remedy was to limit the height of buildings, to widen the sidewalks, and to put all electric cars under-ground in subways so as to allow ample room for all pedestrians? Of course, their objection would be dismissed as absurd. Yet, it would be absurd, **not** because it was not analogous to the auto congestion situation, but **rather** because everyone would realize instantly that chair-mending did not occupy an important place in the industrial world. Or, in other words, the expense of the remedy suggested by the chair-menders' guild would clearly not be justified by the economic gain to be derived.

I have deliberately chosen the ridiculous case of the Chinese chair-mender and have enlarged upon it in order to show the ridiculous nature of the claims made by those who would abolish restrictions on auto traffic and parking, or who would oppose any further restrictions. Let me cite further facts to support my contention that adequate traffic regulation is highly desirable.

In the March traffic check to which I have already referred, 14,923 autos passed out of the business district through the twenty principal means of egress between 4:00 p.m. and 6:30 p.m. The possibilities for traffic through these twenty exits had not been exhausted and yet, there were well-justified complaints of congested auto traffic. If you will take paper and pencil and calculate the number of autos which could have passed out at the regulation intersection speed of fifteen miles per hour, allowing thirty feet to the auto for safety and allowing further for only a single line of autos at each avenue of exit, you will find that in the allotted two and one-half hours, 66,000 autos could have left the business district, whereas less than one-fourth as many actually did leave.

Why then should there have been any impediment to the smooth flow of traffic? There were undoubtedly many impediments among which the following could be listed: Double parking; diagonal parking where there should have been parallel parking; parallel parking where there should have been no parking; slow driving by some which held up an entire line of autos; left hand turns; parking on Market street, thus allowing for only one line of moving autos when there should have been **no** parking so as to allow for two lines of moving autos, the line nearer the curb travelling at a slower rate; lack of skill in driving; ignorance of traffic rules; violations of traffic rules, and so on.

We need traffic regulations to eliminate the impediments I have listed, a sufficiently large traffic squad to enforce them effectively, and a judiciary firm in its disposition of violations. It would be very con-

venient if we could have one simple regulation such as New York City had in the day of horse-drawn vehicles. The only requirement in that day was that the driver of the horse or team should never be more than ten feet distant. No mention was made of fire hydrants, for if the driver was at hand he could get out of the way of the firemen. A very simple requirement! But it eliminated traffic congestion at that time.

I advocate no such rule for auto parking, for it would weight the scales of justice in favor of the wealthy. I advocate a system of regulations which shall obtain the most advantageous use of streets—advantageous in the sense of the larger social benefit to be derived. And I realize that we can hope for no single, simple expedient which will obtain the best use of our streets, for the methods of modern civilization are complex—not simple. Without any radical changes in our transportation facilities, but with proper control we should be able adequately to take care of our transportation needs even when our population has been greatly enlarged. In the meantime, San Francisco as a city should make a thorough and impartial investigation into the problem of a perfectly adjusted city—perfectly adjusted in the sense of preserving the proper relations between the many factors—height of buildings, width of streets, subways, population, etc.,—adjusted for the best public health and the greatest commercial effectiveness. Having made such an investigation we shall be in a better position to answer many of the questions which I have raised but have not attempted to answer.

And now, lest we have forgotten the course of this discussion, let me attempt to summarize the five chief conclusions aimed at:

1. Limiting the height of buildings seems more clearly to belong to the province of public health than to the province of traffic control;
2. Limiting the height of buildings may not have a very appreciable effect upon traffic congestion;
3. The highest degree of commercial effectiveness may possibly call for some degree of traffic congestion;
4. We should seek more effectively to utilize our present transportation facilities before seeking additional ones;
5. We need to conduct a thorough-going investigation as to the layout which would give San Francisco the most attractive appearance possible, the most healthful working and living conditions, and the greatest commercial effectiveness.

* * * *

Competitions for American Academy in Rome Fellowships

The American Academy in Rome has announced its annual competitions for Fellowships in architecture, painting, sculpture, musical composition and classical studies. The Fellowships will be awarded after competitions, which, in the case of the fine arts, are open to unmarried men who are citizens of the United States; in classical studies, to unmarried citizens, men or women. It should be particularly noted that in painting, sculpture and musical composition there is to be no formal competition involving the execution of work on prescribed subjects, but these Fellowships will be awarded by direct selection after a thorough investigation of the artistic ability and personal qualifications of the candidates. Applicants are requested to submit examples of their work and such other evidence as will assist the juries in making the selections.

For the Fellowship in painting, the stipend is provided by the Jacob H. Lazarus Fund of the Metropolitan Museum of Art, established

by Mrs. Amelia B. Lazarus and Miss Emilie Lazarus. For each Fellowship in the fine arts, the stipend is $1,000 a year for three years. In classical studies there is a Fellowship for one year with a stipend of $1,000 and a Fellowship paying $1,000 a year for two years. All Fellows have opportunity for travel, and Fellows in musical composition, of whom an extra amount of travel is required, in visiting the leading musical centers of Europe, receive an additional allowance of $1,000 a year for traveling expenses. In the case of all Fellowships, residence and studio (or study) are provided free of charge at the Academy.

Entries will be received until March first. For circulars of information and application blanks, address Roscoe Guernsey, Executive Secretary, American Academy in Rome, 101 Park Avenue, New York City.

* * * *

Test Reinforcing Bars

ACTING on a letter received from a Chicago architect, Building Commissioner F. E. Doherty of that city has issued an order to architects, engineers, and contractors in the city to the effect that all steel to be used in concrete buildings within his jurisdiction shall be tested and that the reports of such tests shall be sent to his office. The order reads that failure to comply will result in the stopping of work on which any unreported steel is used.

In the letter that caused the commissioner's action, many strong and unsupported claims were made in the face of contrary scientific data with regard to the alleged failure of certain reinforcing steel to conform to the city specifications. It is very unfortunate that this letter was circulated among steel users, and that thus a wrong impression as to the nature of rail steel bars was given.

The poor grade bars used on some jobs are said by authorities to be of a totally different kind from those mentioned by the architect. Rerolled bars made from what may be termed unidentified, or orphan, steel, manufactured as a speculative venture to liquidate surplus war stocks, however, have been used on some jobs and have caused trouble, it is said. This somewhat mysterious material, though usually cheap, has been sold under various names; in many instances it does not uniformly conform to specifications, although casual samples often satisfy inspectors.

Damage has been done to the entire reinforcing bar industry by this cheap material, and the present Chicago situation grew out of this fact. Real inspectors, however, will detect this material and will condemn it without further ceremony.

STUDY FOR A MEMORIAL STAIRWAY. JUNIOR PROBLEM
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Published Monthly in the Interest of the Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast by The Architect and Engineer, Inc.

PUBLICATION OFFICE:
627-629 Foxcroft Building, San Francisco
Telephone Douglas 1828

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Terms of Subscription
(Including postage) to all parts of the United States, $2.50 per annum; to Canada 75c additional; to all Foreign points $1 additional

Vol. 79 DECEMBER, '24 No. 3

MAY HOPE AND COMFORT GLEAMING FAR
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UNTO THE HEARTS OF OUR READERS ALL THEIR DAYS.

CALIFORNIA ARCHITECTURE GROWING

To develop California, not Northern California, not Southern California, but all California, is now the earnest endeavor of many of the keenest minds of the State. For the first time an effort is being made by thinking men to see the larger fabric beyond individual efforts, and to build out of the resources of this great State those things which are vital to its future happiness and prosperity. To build, one must have the ability to think clearly through a problem and to plan its development from the beginning to the end, the patience to work out its infinite details, the power to control materials and mold them into a finished structure. But far more important than all of these, if the structure is to live and become the example for generations to come, the builder must have imagination, be a dreamer of dreams; and many men must dream before the dream comes true and many men of imagination must have come and gone before the genius will appear whose creation will stir the souls and delight the hearts of men.

No man's imagination has yet conceived the California which the coming generation will know; but many men of California are thinking and reasoning; among these will arise men of imagination and feeling, who with the enthusiasm of genius will arouse the imagination and enthusiasm of those about them. Through generations of such men came the civilization of Greece, culminating in those super-men of reasoning and of imagination to whom we owe our forms of government, our art, our science and our civilization. Is it too much to hope that similar men may some day arise in California to leave as great a legacy?

Architecture is a universal art, which measures and reflects the intelligence and imagination of the people, generation by generation. In California architecture is growing up. It is still in the adobe stage and those present-day builders who are advocating the use of the sun-dried brick are making an effort to bring back into the buildings of California as honest a construction as was used by those who built here in the later years of the seventeen hundreds. These old builders left a precious heritage of boldly conceived designs and solid, honest work. In the California of which we dream and which we hope to have, there is no place for the economic parasite, who deals in usury, sharp practice, flimsy

construction, narrow courts, crowded buildings and denies light and air and health and happiness to those who are coming to this State to create its future citizens.

To men who are now thinking in terms of a united effort for all of California there can come no finer endeavor than to plan that the future citizens of California shall live in dwellings which are decently situated, decently surrounded, honestly built and intelligently planned and designed, and to assure that every family in that future California shall have its inherent right to achieve happiness in its home.

California, like other communities, has had to protect its people in the use of property. It has been very fortunate in that its people have so readily accepted the rather stringent restrictions as to the use of property and the improvements upon it which it has been necessary to make to protect property from destruction, to prevent congestion, to stabilize values and to insure continuity of use. Continued and more strict restrictions must be imposed and accepted in the future, that the mistakes permitted in older American communities be not repeated here.

—Edwin Bergstrom, A.I.A.,
In California Development Journal.

BUILDING TRADES WAGE SCHEDULE

Effective January 1, 1925 and continuing to December 31, 1925, the San Francisco Builders' Exchange has announced a building trades standard wage scale that is practically the same as the schedule in force all of this year. In fixing the 1925 scale probable living costs were carefully considered. Eight hours will constitute a day's work while overtime will be paid time and a-half, except Sundays and holidays, when double time will be paid. No wage reductions have been made in any of the trades but there have been two or three small increases, such as tile-setters whose wage has been raised from $8.50 to $9.00 per day, and structural iron workers from $9.00 to $10.00 per day.

It is gratifying to note that there have been no serious labor disturbances in the building trades during the year, indicating that the American plan which has been generally adopted has met with favor. There has been a steady increase in the volume of building construction both in San Francisco and the Bay region, and owners no longer delay building through fear of possible demands for higher wages or expensive strike litigation. The fact that San Francisco is enjoying prosperity is good evidence that the building industry is in a healthy state.

GOOD design is creeping in to the larger cities via the small building and here and there is found a larger building with outstanding merit as an architectural conception. The commercial buildings in California are generally more honestly built and more intelligently planned than the domestic work. They are today well abreast of the best of their type in American architecture, but they are so nearly standardized as to be monotonous.

—E. B.

UNIFORM BUILDING CODES

The multiplicity of different confusing building regulations which the building industry has long suffered promises to cease in the near future. A special committee, appointed by the Alameda County Builders' Exchange, in concert with public officials and building inspectors of Oakland, Berkeley, Alameda, Piedmont, Richmond, San Leandro and Emeryville, has commissioned Mr. Mark C. Cohn of San Francisco to write a uniform building code for the seven East Bay cities. Other cities in Northern and Southern California will participate in the movement.

The Pacific Coast Building Officials, during the three-day conference held in Oakland, November 20th to 22nd, emphatically resolved to carry on the campaign started a year ago for uniform building regulations, and Mr. Cohn, as consultant to the building officials,

proposes to use the East Bay cities as the basis for a code that may become the uniform code for the cities of the Pacific Slope.

There is absolutely no reason why this effort should not prove the biggest, most important, and most desirable program ever undertaken for the good of all interests that comprise the building industry. It is to be hoped that everyone engaged in the building industry will lend the utmost support to the movement. The Architect and Engineer has consistently supported Mr. Cohn in his long campaign advocating modernized uniform building regulations. Mr. Cohn, as an expert consultant on housing and building regulations, has been prominently identified with the building industry for several years, and the time served by him as an official in municipal, state and federal offices particularly qualifies him to speak with authority from the governmental aspects of the problem.

IN all the world there is no place like California for the architect; in no place is his imagination so aroused by nature, and here, if he can build his dreams, will develop the finest architecture in the world.

—EDWIN BURGSTROM, *Architect.*

LUMBER SHORTAGE IS SERIOUS

Every branch of the building industry should join in the movement to conserve lumber by substituting other materials whenever and wherever practical or possible. Not from a selfish motive should they do this but rather from the standpoint of preventing a threatened lumber famine that would retard necessary building construction and seriously handicap the publisher who is dependent upon wood pulp for his paper supply. It is a well-known fact that our lumber forests which supply the raw material for pulp and paper requirements, are fast being depleted.

The casual reader may not think seriously about this but when he appreciates that the Chicago Tribune requires 171 acres of timber land to produce just one Sunday edition, he will know that the timber requirements of the paper industry are enormous. Roy Dickinson, in a recent issue of Printers' Ink, points out that within twelve or fifteen years it is entirely possible that a real pulp and paper problem will face us. If there are no efforts at conservation what's going to happen to the building industry to say nothing of the paper industry? Lumber suitable for building purposes takes longer time to grow. It is, therefore, vitally essential that every effort should be made to conserve and reforest before it is too late. The pulp and paper industry should assume the leadership in timber-growing on its own forest lands and those upon which it is dependent for pulp-wood supplies.

COMPETITIONS

Public Building Competition

The trustees of the Public Library, Museums, and National Gallery of Victoria, invite architects practicing in Australia to submit competitive designs on or before Feb. 11, 1925, for the completion of the buildings for the library, museums, and art galleries in Victoria. Particulars may be obtained from the secretary of the Public Library, Melbourne. The judges will be Professor Wilkinson, of Sydney University, J. S. Murdoch, Chief Architect to the Commonwealth Government, P. B. Hudson, president of the Victorian Institute of Architects, and Dr. Leeper and G. Swinbourne, representing the trustees of the Public Library of Victoria.

Los Angeles Competition

The Los Angeles city council has refused the request of the board of public works for authority to appoint architects for the proposed $5,000,000 city hall and has ordered the board to proceed with the original plan of holding an architectural competition. A committee of architects to draft a program for the competition is expected to submit its report within the next ten days or two weeks. Members of the committee are: Messrs. J. E. Allison and Harwood Hewitt of the Allied Architects' Association; John C. Austin and John Parkinson, representing architects outside this group, and Wm. B. Faville, San Francisco.

With the Architects

Building Reports and Personal Mention

San Francisco Apartment Houses

Architects Baumann & Jose, 251 Kearny street, San Francisco, have completed plans for a six-story reinforced concrete apartment house to be erected on the north side of Post street, between Hyde and Larkin streets, San Francisco, for Mr. Louis Stoff. There will be forty-eight apartments. Building will cost $125,000. The same architects have completed plans for a $40,000, three-story brick veneer apartment house for Mr. W. F. Hoffman. It will occupy the northeast corner of Octavia and Lombard streets, San Francisco. Mr. O. N. Oyen will build a three-story brick veneer apartment house at Schrader and Fell streets, San Francisco, from plans by the same architects.

University Memorial Gymnasium

Plans have been completed for the first unit of the proposed memorial women's gymnasium and social center for the University of California by Architect Bernard Maybeck and Julia Morgan, associated. The building is to be the gift of Mr. William Randolph Hearst in memory of his mother, Mrs. Phoebe Apperson Hearst. The original cost of this building was estimated at $350,000, but with the second unit which will provide an immense assembly hall to seat 4500, the total cost will amount to one million dollars. Construction of the first unit will begin within thirty days.

New Elks Buildings

Besides the million dollar Elks home now under construction in San Francisco, two other B. P. O. buildings of equal importance are about to be started in the Bay region. One is at Oakland—a twelve-story structure with a 220-foot tower—being designed by Architect William Knowles. The second is at Sacramento, a fourteen-story structure, plans for which are being completed by Architect Leonard F. Starks. All three buildings will represent a total expenditure of close to four million dollars.

Los Angeles Office Building

Architects Walker & Eisen, Great Republican building, Los Angeles, are preparing plans for a twelve-story Class A store and office building to be erected on the southwest corner of Tenth and Broadway, Los Angeles, for the Los Angeles Investment Company. There will be 275 offices. The estimated cost is $600,000.

Architect Sues For Fee

A petition for a writ of mandamus has been filed in the superior court at Willows by Architect W. H. Weeks of San Francisco, vs. Ed. S. Ball, as treasurer of Glenn County. It is alleged by the petitioner that he entered into a contract with the board of school trustees of the Plaza district "to prepare plans and supervise the construction of a new school building and for his services was to receive six per cent of the total cost of the building.

It is also alleged that the claim, which amounts to $367.20 was passed upon by the board of school trustees, a requisition drawn for the amount by School Superintendent S. M. Chaney, which was marked "allowed" by County Auditor J. W. Monroe. On presentation of the warrant, petitioner avers, County Treasurer Ball refused its payment.

Two Large Theatres

Architect Mark T. Jorgensen, of 110 Sutter street, San Francisco, has completed plans for a reinforced concrete and hollow tile moving picture theatre to be built on Park boulevard at 19th street, Oakland, for the Golden Gate Theatre Co. Construction will start as soon as a contract is let. The estimated cost is $150,000. The same architect is preparing plans for a theatre on Mission street in the Crocker Amazon Tract, San Francisco, for the same owners at a cost of $150,000.

Architects' Chapter Nominates Officers

Mr. D. C. Allison of Allison & Allison, architects of Los Angeles, has been nominated for president of Southern California Chapter, American Institute of Architects; Mr. Silas R. Burns has been nominated for vice-president; Mr. D. J. Witmer for secretary; Mr. A. C. Zimmerman for treasurer; Mr. H. C. Chambers for director for two-year term and Mr. Donald B. Parkinson for director for three-year term. The election of officers will be held at the December meeting.

One Million Dollar Apartment House

F. W. Straus & Co. will finance construction of a ten-story Class B reinforced concrete apartment house at Mason and Sacramento streets, San Francisco, for Mrs. M. B. McAdam. Messrs. Weeks & Day are the architects and engineers. There will be approximately three hundred rooms divided into apartments of from one to nine rooms each. A separate building will be erected to accommodate 225 automobiles.

Personal

Mr. Martin T. Hooper, consulting engineer, specializing in mechanical and electrical layouts for buildings, power plants, etc., has opened an office at 634 I. W. Hellman building, Los Angeles. Mr. Hooper was, until recently, field engineer for the U. S. public health service of Washington, D. C.

Architect Loy L. Smith has moved his office from the Byrne building, to the City Club building, 833 South Spring street, Los Angeles.

Architect James J. Donnellan of Los Angeles was killed October 23rd when an automobile in which he was riding collided with a Pacific Electric train on the San Fernando road near Humboldt street. Mr. Donnellan had an office at 231 Bryson building. His son, who came from Seattle, has arranged to continue the business.

City Engineer M. M. O'Shaughnessy of San Francisco has been appointed by the Portland, Oregon, City Council a member of a board of consulting engineers to advise upon plans for water front developmet, the first unit of which will be undertaken next year at a cost of $2,000,000.

Mr. B. F. Jacobsen, San Francisco hydraulic and electrical engineer, has received notification from the American Society of Civil Engineers that he won the Norman medal, which is the highest annual award of that body. The award was made by a board of judges for the excellence of Mr. Jacobsen's paper on "Stresses in Multiple Arch Dams."

Mr. A. L. Sonderegger, consulting engineer of Los Angeles, has been chosen president of Los Angeles Chapter, American Association of Engineers, to fill the unexpired term of Mr. Samuel Storrow, resigned. Mr. Paul H. Ehlers was elected vice-president and Mr. J. Max Lee a director.

Messrs Ira G. Hedrick, Wm. D. Smith and Lloyd G. Frost, consulting engineers, have formed a partnership with offices in Portland, Oregon.

Mr. F. Nikirk, formerly of San Jose, has been appointed city engineer of San Leandro, succeeding Mr. Robert Goodwin, resigned.

Mr. A. M. Jensen, consulting engineer with offices in Fresno, will be a candidate for the office of commissioner of public works of that city at the coming municipal election.

Architects Tuttle & Tuttle have moved into new offices at 363 17th street, Oakland.

Mr. Loren Hursh, for the past four years chief of the Bureau of Architecture of the San Francisco Department of Public Works, has resigned to become associated with the office of Mr. John Reid, Jr., city architect. Mr. Chas. H. Sawyer succeeds Mr. Hursh..

Members of Chapter Committees

The following appointments of members of the Washington State Chapter, A. I. A., have been made on Institute committees: A. H. Albertson, Historic Monuments and Scenery; Chas. H. Alden, Structural Service and War Memorials; Louis Baeder, Registration Laws; George Gove, Architectural Relations, and F. A. Naramore, Practice and School Building Standards.

Examination for Draftsmen

U. S. civil service commission announces examinations for chief architectural draftsman and junior architectural draftsman to fill vacancies in the quartermaster general's office, Washington, D. C., will be held throughout the country January 7, 1925; salaries, $2400 to $3000 a year for chief draftsman and $1680 to $2040 for junior draftsman.

Twelve-Story Office Building

Preliminary plans have been prepared by Architects Powers & Ahnden, 460 Montgomery street, San Francisco, for a twelve-story store and office building at Market and Fulton streets, San Francisco, for Mr. F. W. Leis. Structure will cost $350,000.

Portland Masonic Temple

Working drawings are being made by Architects Sutton & Whitney, Lewis building, Portland, for a five-story Class A Masonic Temple to cost one million dollars, the preliminary plans of this firm having been awarded first prize in a recent competition, Mr. Chas. Peter Weeks of San Francisco, being a member of the jury of award.

Designing Many Dwellings

Architect R. R. Irvine, Call building, San Francisco, has completed plans for quite a number of two-story frame dwellings and bungalows, three of which are to be built on Tara street, north of Mount Vernon avenue, San Francisco, for Mr. A. L. Lundy and one on the south side of Summer street, Burlingame, for Mr. W. P. Schreokengast.

Tennis Clubhouse

Plans have been prepared by Architect Nathaniel Blaisdell, 255 California street, San Francisco, for a new club building, tennis court, bleechers, etc., for the California Tennis Association on the block bounded by Sutter, Bush, Pierce and Scott streets, San Francisco.

San Francisco School Building

Plans have been completed by Architect G. A. Lansburgh for the new Alvarado school building to be erected at 22nd and Douglas streets, San Francisco, at a cost of $400,000. There will be twenty-five classrooms and an auditorium.

Class A Apartment House

Architect Edward E. Young, 2002 California street, San Francisco, is preparing plans for an eight-story Class A apartment house to be erected at Sacramento and Mason streets, San Francisco, for Mr. Eugene Fritz, formerly manager of the Huntington Apartments. The building will contain thirty-two rooms to a floor and will have steel frame, pressed brick front with terra cotta trimmings. The cost is estimated at $260,000.

Concrete Store Building

Architects McCall & Davis, of Oakland, have completed plans for eight stores to be built at Atherton and Allston Way, Berkeley, for Chas. W. Heyer, Jr., Mills building, San Francisco. The same architects have opened bids for a large two-story frame and stucco residence to be built in Piedmont for Mr. H. M. Lorber at a cost of $40,000.

Community Apartments

Architects Sam Lightner Hyman and A. Appleton have prepared plans for an eight-story Class B community apartment house to be built on Jackson street, between Buchanan and Laguna streets, San Francisco, estimated to cost $150,000.

Sacramento Bank Building

Architects Chas. E. Gottschalk and M. J. Rist, Phelan building, San Francisco, are completing working drawings for a two-story steel and terra cotta bank building for the United Bank & Trust Company of Sacramento.

Stockton Building

Architect Peter L. Sala of Stockton has prepared plans for a two-story steel and brick store and loft building for the Chas. E. Pike Furniture Company, of Stockton. About $80,000 will be invested in the project.

Store Building

Architects Julius E. Krafft & Sons have completed plans for a $50,000 Class C store building to be erected on the Embarcadero, north of Howard street, San Francisco, for the Pope & Talbot Land Company. There will be ten stores.

Convention of Builders' Exchange

The fourteenth annual convention of the National Association of Builders' Exchanges will be held in Los Angeles, February 23rd to 26th, 1925.

Called Abroad

Architect James H. Schack, president of the Washington State Chapter, A.I.A., was unexpectedly called to Europe on account of the illness of his mother. He will be away until early in January.

Architect Answers Critic

A recent number of Building, published in Sydney, Australia, contained editorial criticism of the Salinas Union High School building, designed by Architect Ralph Wyckoff, now of Wyckoff & White of San Jose. The school was illustrated very fully in The Architect and Engineer soon after its completion. Mr. Wyckoff, in a letter to the publishers of the Sydney paper, takes exception to some of the criticism, as indicated in the following excerpts from his communication:

"In describing this building I note that you class it as Mission style. Presuming that you have never seen a true type of Mission building, for your benefit I will briefly describe what 'Mission' really implies: The Missions of California and other parts of the southwestern portion of the United States were built by savage Indians, under the direction of Catholic priests, who were not architects. These buildings were built at times and in places where none of the accepted materials used in building construction today were available. In most instances they were of sun-dried mud bricks. These buildings, in every instance, are entirely lacking in architectural details, but often times their situation and setting have made a very interesting and picturesque study, which has caused them to be classed as architectural accomplishments by fiction writers and other persons not versed in what constitutes a real piece of architecture.

"The Salinas Union High School, properly classed, belongs to what is known as Spanish Colonial. In other words, it is a direct descendant from the Greek, to Roman, to Spain, then to Mexico, where it reached its highest architectural development and has been adapted by American architects to various forms of modern construction.

"Your statement regarding the difficulty in classifying this building, as to whether it was a town hall, public hospital, factory, or school, is, I presume, a relative classification depending somewhat upon the style of buildings that the party making such a classification has been used to observing. In America, however, a town hall never has class room groupings of windows, and as far as I know, none have large auditoriums with stages, etc. Some town halls, however, have a tower. The Salinas Union High School, having only one element that is ever used in a town hall, would hardly be placed in that class, at least in America. As far as I know, public hospitals never have class room groupings of windows or a large auditorium. The same may be said of a factory. However, some factories are equipped with windows which give even more light than is necessary in class rooms. It is true that this building has been mistaken, perhaps

with good reason, for a small college or a denominational school, of some kind, although we do not consider the tower as having any ecclesiastical significance.

"Regarding your statement in which you say that the various elements of the building appeared to be built at different times and in a haphazard manner, will state that this building was planned all at the same time and built at the same time. The apparent inconsistencies were carefully studied with the view to eliminate, as far as possible, producing a building which would be devoid of interest. By that I mean that we deliberately planned the building as it appears, knowing that we were laying ourselves liable to academic criticisms, but at the same time we felt, in producing this building, that we would create an interest in the minds of people who saw it that would be carried away with them. In other words, we tried to avoid, as much as possible, designing to the crude rules of thumb, keeping in mind, however, that good architecture must be produced.

"I will state for example that the Pennsylvania Station in New York, by McKim, Meade & White, is an extreme example of correct architecture, but at the same time there is no colder or less interesting piece of work in the United States; beyond criticism, but having no interest or charm.

"Hoping that our motives and our explanation will be of interest to you, I am,

Yours very truly,
(Signed) RALPH WYCKOFF.

Allied Arts Exposition

Preparations are going forward satisfactorily for the Architectural and Allied Arts Exposition to be held in Grand Central Palace, New York, from April 20th to May 2nd, 1925.

The exhibition is under the direction of Mr. Charles H. Green, 105 West 40th street, former director of Manufactures and Varied Industries at the Panama Pacific and other world exhibitions.

Mr. Green thus outlined the forthcoming exposition:

"The Architectural and Allied Arts Exposition will represent the collection of the achievements of a great profession together with objects which may be classified as art in industry, including materials that enter into the construction and embellishment of public buildings and private homes. Such an exposition might well be called an encyclopedia of society as applied to art, for it will represent in highly specified array society's words and works, and will provide in complete detail 'a living picture of industrial art at which mankind has arrived' and will actually provide a new starting point from which men may direct future exertions. It will present for the inspection of the public an assembly of the best which the world has to show in architecture and industrial art and which is very important; it will offer these achievements of society, these trophies of civilization in highly selected, accurately classified and effectively illustrated array. It offers illustrations covering the full field of artistic performance from the production of designs of public and private buildings to a presentation of the rarest and most delightful creations of the brain and hands of man, in what might be classified as the fine arts of civilization."

Dr. Everett Waid, President of the American Institute of Architects and Chairman of the General Committee of the Exposition is one of those most actively responsible for bringing to New York not only the largest architectural exposition in the world, but the first A. I. A. convention that has been held here in many years. The National City Planning Conference, the American City Planning Institute, the International Garden Cities and Towns Planning Federation are among scheduled meetings at the time of the exposition.

Architect Lansburgh Praised

Architect G. A. Lansburgh of San Francisco has been given some flattering publicity by the New York papers since the opening in that city of Martin Beck's new theater on November 11th. It is quite a little honor for a Pacific Coast architect to be called upon to design a theater in a city that is known the world over for its famous architects. And it is further a matter of distinction to be complimented for one's success by a critical press, such as that reputed to hold forth in the Eastern metropolis. One paper describes the new play house as "so chaste, simple and dignified that it is a relief to the theatergoers who have been accustomed to so much plastic elaboration." Continuing, the same paper describes the exterior of the theater as "of the utmost simplicity, with plain pierced walls carried on beautifully proportioned stone columns and arches with charmingly carved Byzantine capitals. In this connection it should also be explained that Lansburgh has found a method of concealing, or at least beautifying the hideous fire escape and has made an aesthetic note out of a practical necessity. In the cloister-like colonnade on the street he has set a stairway, supported by stone arches.

"Aside from the architectural design, with its many conveniences and advantages hitherto unknown to New York, Lansburgh's friends think he should be proudest of the colorings—the art—of his product. No paint is used in the theater, yet the quietest, softest and most restful colors are obtained in the plaster itself. The colors are orange, blue and red, all very soft, yet sufficiently vivid to hold and fascinate the eye."

With the Engineers

The Public and the Engineer

By P. M. FOGG, in National Engineer

ONE of the reasons for an undoubted lack of public appreciation of engineers and their work is due to an apparent absence of sensational appeal in many of their every-day achievements. The layman sees only the humdrum activity. Yet the fabric of engineering accomplishment is shot through with romance and adventure.

The engineer has been slow to realize the tremendous value to him of greater publicity and a wider understanding of his attainments. Deeply engrossed in his work, he has for too long ignored the man-on-the-street; hence the latter is hardly to be blamed when, as is the case today, he does not recognize his full obligation to the profession. Nobody has taken the trouble to tell him very much about it. Who are engineers, anyway?

Mr. Average Citizen enjoys filtered water, gas, coal and electricity in his home. He uses the telephone constantly, turns on the steam heat, tunes in his radio set, tours over the smoothest of highways, patronizes the street cars and the railroads, and rents space in the new forty-five story office building. But does it occur to him that for all of these, and many more of the necessities and comforts of his existence, a host of engineers are responsible?

It does not. He takes them for granted, simply because engineers have not deemed it worth their while to cultivate his acquaintance and to inform him. Ask Mr. Citizen about such matters and he will probably tell you that Grady, the contractor, built the office building; that a plumber installed the water pipes in his residence; that the lighting corporation sends the "juice" over the wires; that his roadster came from a dealer down on Broadway, and so on. Not a single engineer appears to be connected with his ordinary routine, even remotely. Yet if you suggest a matter of illness, his mind at once reverts to the physician or the surgeon; speak of a lawsuit or of a bankruptcy, and he will think of attorneys, or a rare painting, and he talks of artists. Somehow, engineering has not yet been linked up definitely in his mind with the tangible phases of civilization.

In order to remedy the present situation and secure a closer touch with the public, engineers should find a way to join hands; regardless of the especial niche which any one group may occupy. The task of educating the people requires united strength. It is neither a light nor a simple job, but one of continuous duration. Let the old aloofness which has separated engineers both from themselves and the outside world be cleared away and a larger degree of unity obtain, so that the profession as a whole shall no longer be taken for granted, so to speak, by those who do not understand its real importance to society.

At the same time, each specialized group can tackle the situation from within its own borders. Take the case of the operating engineers, for instance. Here are men whose work naturally tends to crowd them into the background. They stay behind the scenes, watching the plants, while the public throws the switches, and pays the bills, with no thought of engineers. Yet far below the level of the streets, or at the bottom of mine shafts; away off in lonely canyons, or down in the depth of ocean liners, these men are on the job, night and day, to insure the uninterrupted operation of activities at the ends of countless strands of a complicated web.

There is an excellent opportunity here to explain to the public something of the hardships, the dangers, the thrills, the adventure, the satisfaction in service, the skill, the alertness in times of accident, and even of the tragedies which all have their part in the work of the operating engineers, whether in steam plants, hydro-electric developments, or in booster stations. The layman's knowledge of electricity is quite limited. He does not understand kilowatts, load factors or feed water. But he does enjoy the word picture that will grip his interest, and stir his appreciation of those who are the actors, if presented in his own familiar terms.

Similarly, the mechanical engineer, if properly and consistently introduced, could literally astonish the world. Of cams, eccentrics, bushings and alloys, most people know nothing and care less. But they would be glad to learn of the men who are busily engaged in perfecting devices which minister to their conveniences, comfort and safety, if the story was told in words which they could grasp. Let the public in on every interesting feat, make the account read like fiction, keep everlastingly at it, and the

nation shall come to learn that it owes a tremendous debt to the ingenuity of the mechanical engineer; an obligation not even guessed at, heretofore.

The average man realizes of course, that he lives in a world of electrical contrivances of all kinds. But these come to him without his effort, and without explanation except that to secure certain desired effects, he is instructed to push certain buttons. The engineers whose patient study and endless experimental efforts have brought success in advancing electrical science for popular benefit, have a wonderful chance to appeal to the public imagination with the story of their achievements. Surely this needs no elaboration or further proof. Not one in a hundred thousand persons understands more than the simplest of their technical terms, but if the subject was offered in the phrases of every day life, with proper credit awarded to the engineers, such publicity would go a long way to build up greater respect and understanding in connection with this branch of the profession.

A dozen other cases might be cited, but enough has been said to illustrate the point that the field is wide open both for concerted endeavor and for group action. Through the public press, and the use of the extensive facilities of large employing corporations, by means of information distributed in an ethical way to the users of engineer-created products, through fiction, addresses, film displays, personal efforts, the election of the highest types of engineers to public offices, and by means of other avenues which will suggest themselves in local instances, greater influence and wider publicity can be attained.

There are signs that economic pressure is bringing engineers together for an attack upon problems common to all, but the movement is as yet in its initial stage. The surface of the publicity problem has hardly been touched; its possibilities are not even fully realized. The people do not know who the engineers are, nor what they are doing. Mr. Plain Citizen has not been altogether to blame for his ignorance. It is time to enlighten him and to raise the profession in his esteem to the place where it rightfully belongs.

Offered Position

The position of consulting engineer for Los Angeles harbor has been formally tendered to Maj. Gen. Lansing H. Beach by the harbor commission. The salary will be $12,000 a year, the appointment to run until July 1, 1925, when the new city charter goes into effect. Gen. Beach, who is now in Mexico, it is understood will accept. Several experienced harbor engineers are being considered by the commission for the post of chief harbor engineer, temporarily filled by Mr. J. W. Ludlow.

REDUCTION OF HOUSE HEATING COSTS

BUILDING engineers and, to some extent, architects are beginning to give much serious attention to the construction of dwellings with a special view to conservation of heat and reduction of heating costs. The subject of relative heat transmissibility of various materials under differing conditions is a difficult one, and so much remains to be done that the manufacturers of the principal building materials have recently appointed a technical committee to study it further. Enough progress has been made to make it certain that it is easily possible through the inexpensive use of insulation and structural precautions to reduce by as much as 50 to 60 per cent the cost of heating houses of the same general structure and material.

A saving of $100 a year in this way in a $10,000 house is equivalent to a reduction of 2 per cent in the annual interest rate on a $5,000 mortgage on it.

Theoretically at least it has been demonstrated, according to the building engineers of the Research Bureau of the National Lumber Manufacturers Association, that as between varieties of the same general sort of construction there are enormous differences in the amount of fuel needed to preserve a house at a given temperature.

Comparisons between construction of fundamentally different natures, as between lumber and brick, for instance, are not so reliable. One authority finds that an ordinary frame (lumber) construction wall is twice as retentive of heat as straight brick construction. On the other hand, another authority concludes that brick with a furring space between brick and plaster, has a slight advantage over simple frame construction, no form of insulation being used with either.

Again, the Bureau of Industrial Research, Chicago, examined 15 types of wall construction with respect to heat retention, (assuming 35 degrees difference between inside and outside temperatures) and assigned the highest place to standard lumber construction, using tongued and grooved sheathing with shingles (red decar) on the outside and the best grade of insulation or heat-stopping material. Second place was assigned to the same type of construction with clapboards replacing shingles. The most heat-wasteful type in the list was that of many of the army cantonments erected during the war for temporary use; viz., ordinary framing with outside either stucco on lath or clapboards (no sheathing, no building paper, and no heatstop) and plaster inside.

Dead Level Roofs

By J. I. HOLDER*

IT comes to some as a distinct shock when the idea of a dead level roof is presented. It sounds radical. Why make a roof "dead level"? Yet, for certain types of structures it is ideal from the standpoint of both economy and practicability.

The dead level roof is merely a large watertight pan with adequate interior drainage outlets, properly spaced. It serves its greatest purpose when built in connection with structures which are to have additional stories constructed later so that the roof deck may be used as a floor after the roofing has been removed. A dry sheet is usually placed over the roof deck before application of roofing, so that the roof deck, which is later to function as a floor, may be kept clean and free from asphalt.

The dead level roof has been confined almost exclusively to steel and concrete construction. While it has been and may be used successfully in wood or mill construction, there is always the possibility of shrinkage and warping, which frequently creates sags or depressions in the roof. These sags or depressions fill with water and are sometimes considered objectionable. Under normal or ordinary conditions, standing water has no terrors for the really well built-up roof constructed of good materials, and properly inspected workmanship. In fact, water acts as a preservative to good roofing materials. It is heat, rather than any other one factor, that takes its toll of life from the roofing.

The economy and advantages of the dead level roof are:

First: A plain, flat deck costs less than a deck cumbered with fills and irregular false work. Crickets, cants, and other false work perform no function other than to hurry the water to the outlets. They are unnecessary, and their expense is unwarranted.

Second: A saving can be effected in leader lines. Where water is not hurried to the outlets a lesser number of leader lines, or smaller sized leader lines are required. Over a flat deck water drains slowly.

Third: Parapet walls of low, even height are more cheaply built than when high or stepped. It is possible and practicable in many cases to build low, even parapets.

Fourth: It costs less to apply roofing over an even, level surface than on a deck cumbered with crickets and cants which require frequent mitres in laying the roofing.

Fifth: Flashings set in a straight line are easier and cheaper to install. Furthermore, there is less danger of leaks than where flashings are stepped to conform to the incline of the roof deck. Stepped joints frequently have open spaces at such junctures, and these are leak breeders.

Sixth: The possibility of choked outlets is considerably decreased. Debris on the roof, such as leaves, paper, etc., does not carry as readily to the outlets as when the roof deck is inclined. The steeper the incline the more accentuated is this condition.

Seventh: Installation of shafting, sprinkler systems, pipes, etc., costs less on level ceilings than where inclined. Air spaces and furring are not required to produce a level ceiling on the top story.

It is usually advisable to provide scuppers in parapet walls. These act as a safety overflow in case drains become clogged. They should be spaced about 75 feet on center. Skylight and other curbs should always be carried up above the level of scuppers.

Outlets and leader lines are usually placed so that a given area is properly drained without the accumulation of too much water on the roof. As a working basis it is safe to figure on one square inch of leader line taking care of 350 square feet of roof area. A three-inch pipe will drain 2500 square feet of roof area; a four-inch pipe 4400 square feet; a five-inch pipe 6900 square feet; a six-inch pipe 9900 square feet; an eight-inch pipe 17,600 square feet. It is always advisable to install not less than two leader outlets as a factor of safety against drain stoppage or clogging.

Reinforcing rods coming up through the roof may be treated in two ways. Either they can be boxed in and roofed over, or the rods may be bent over and filled in and covered with concrete, forming a sort of lump or hump on the roof which can easily be roofed over.

The dead level roof is not an experiment. It has been successfully constructed by a number of leading architects and engineers throughout the country.

* Mr. Holder was formerly Secretary-Treasurer of the National Association of Roofing Contractors, now known as United Roofing Contractors' Association, and at the present time is with the Engineering Department of the Paraffine Companies, Inc.

New Officers

E. M. Gleason, Jr., was elected president of the new Santa Barbara Chapter, American Association of Engineers. U. S. Grant was chosen vice-president; George D. Morrison, secretary-treasurer, and Lockwood De Forest, Jr., assistant secretary-treasurer. The charter was formally presented to the new chapter by National Director Donald M. Baker of Los Angeles, at a dinner meeting held at the Arlington hotel, Santa Barbara. A delegation of members of the A. A. E. from Los Angeles attended the meeting.

This pavement, made of Atlas Lumnite cement, carried heavy traffic the day after construction. Illustration shows fifteen ton oil distributor and ten ton tractor being driven over pavement twenty-four hours after being laid.

Driving an eighteen-inch octagonal pile 25 feet long and made of Lumnite cement, twenty-six hours after casting. McLain Contracting Company, Baltimore.

Field of the Contractor

And Now 28 Day Strength Concrete in 24 Hours

DURING the World War in France, the necessity for speed in military operations, resulted in the discovery that alumina cements in use there possessed remarkable quick hardening properties, and high early strength.

Artillery foundations were constructed with this material, and within 24 hours, these foundations successfully withstood the shock of heavy firing guns. With ordinary building cements, it would have been necessary to wait 28 days before these foundations could have withstood such shock.

Engineers were quick to see that the speed and efficiency possible in military operations through the use of these cements, would be equally valuable in general concrete construction for emergency work or wherever speed was vital, and since the war, wide commercial use has been made of these cements in France, but none has been available for this country in any large quantity.

The need for a similar hydraulic cement in the United States was so apparent, that the Atlas Lumnite Cement Company was formed and the American Patents on this product were acquired. Now Lumnite cement similar to those high early strength cements in France, is being manufactured at Northampton, Pa., by this company.

Lumnite cement is a hydraulic cement for concrete and mortar. It develops in 24 hours greater strength than that developed by other building cements in 28 days. This high early strength is due to its chemical composition resulting from the use of high grade alumina ore, Bauxite, as its principal raw material.

Because of its high early strength—which makes 28 day concrete in 24 hours—the use of Lumnite effects big savings in concrete construction. For highways or street work, it safely permits the heaviest traffic within 24 hours after completion. Floors or pavements, building construction or alterations, engine and machine foundations, reconstruction or repair of concrete structures, underpinning buildings, retaining walls, concrete piles, foundations, railway maintenance and new construction, construction around water works or power houses, and all concrete work where time is important, may safely be put into service 24 hours after pouring concrete made with Lumnite.

An additional advantage of Lumnite is that it can be used in much colder weather than other building cements. It is less subject to injury from frost because of its quick hardening and the heat generating in the concrete by this chemical action. Lumnite is adapted to the various uses of concrete and is mixed and manipulated in the same manner as Portland cement. While it develops at 24 hours greater strength than that of other building cements in 28 days, it is not quick setting. It affords the usual time for mixing, transporting, and pouring into forms but after setting, its high early strength develops with great rapidity.

Building Officials' Conference

The Pacific Coast Building Officials' Conference met in the Oakland hotel, November 20th to November 22nd. It was the third annual meeting of this organization.

In closing its deliberations, the Conference went on record as favorable to state laws in California regulating the construction of public and private schools, hospitals, places of detention and places of public assemblage. The matter of uniform building regulations for all Western cities was the paramount subject of discussion and the Conference reiterated its resolution of a year ago to carry on the campaign for uniform codes.

About fifty members in attendance registered from many cities in California, Washington and Arizona. Mr. J. J. Backus, Chief Inspector of Buildings of Los Angeles, presided at the meetings. The Alameda County Builders' Exchange and the Oakland Chamber of Commerce provided for the entertainment, and served both a luncheon and a banquet.

The Conference re-elected J. J. Backus, chief building inspector of Los Angeles, as president; H. E. Plummer, chief building inspector of Portland, Oregon, vice-president; A. C. Horner, building inspector of Stockton, was re-elected secretary; Mark C. Cohn, expert consultant on housing and building regulations and inspection, was continued as the consultant to the building officials; Robert Proctor, chief building inspector, Seattle, Washington, was elected a member of the executive committee to succeed Robert Greig formerly building inspector of Berkeley; Thomas W. Ryan, chief building inspector of Oakland, was re-

elected to succeed himself on the executive committee. Other members of the executive committee are Oscar G. Knecht and M. C. Woodruff, chief building inspectors of San Diego and San Jose, respectively. The president, vice-president and secretary complete the executive committee.

Medusa Has New Manager

Mr. H. T. McCormack has been appointed general sales manager of the Sandusky Cement Company of Cleveland, Ohio, manufacturers of the well-known Medusa White Portland Cement, succeeding Mr. Clinton B. Rogers, resigned.

Sash Chains Replacing Sash Cord in Modern Building

By G. H. OYER

EXCEPTING where buildings are equipped with casements, windows are arranged with "double-hung" or "guillotine" sash, so that they can be raised, lowered, or held open by means of weights, which counter balance the sash. These weights are placed behind the woodwork which forms the window's architectrave. They can be reached only by removing the woodwork, at considerable inconvenience and cost, so it is most desirable that the installation be carefully made in the first place. The weights should be neither too heavy nor too light for the sash which they are designed to counter balance. The pulleys and other mechanism should be simple, to eliminate the possibility of their getting out of order. Above all, the chains upon which the weights are hung must be durable.

Architects have come to recognize that sash cord, with its countless disadvantages, does not render satisfactory service. They have turned to sash chains. One of the leading makes which has been rendering noteworthy service for several years is the sash chain manufactured by the American Chain Company, Inc., of Bridgeport, Conn. A point of interest in these chains is the fact that they are made in five sizes, numbered to correspond with the weights of sash for which they are intended. The links of American sash chain, being flat, give the chain a strap-like action and it runs smoothly and freely over the regular sash chain pulley.

The American Chain Company also manufactures a round cord pulley chain designed, as the name implies, to run over the ordinary round cord pulley. Comparing these two chains with rope, we find that their superiority lies in the fact that they can not stretch, unravel, rot or be cut by sharp edges of pulleys and weights; and there is no waste in tying knots when attaching the chain. The application is accomplished by means of a very simple hook arrangement for each end of the chain.

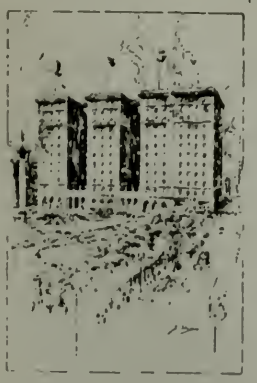
Page 1332 of Sweet's Architectural Catalogue is devoted to the sizes, weights and finishes of these American sash chains.

Hollow Tile Garage

The H. H. Winner Company, 55 New Montgomery street, San Francisco, has completed plans for the proposed store and office building at 13th and Franklin streets, Oakland, and a contract has been let to R. W. Littlefield for approximately $130,000. The Winner Co. is preparing plans for a one-story hollow tile garage, 100x165, to be erected at 21st and Webster streets, Oakland, for Mr. Herbert R. Yerxa.

The fellow who is always kicking abobut lack of business says:

"I cannot afford to advertise."



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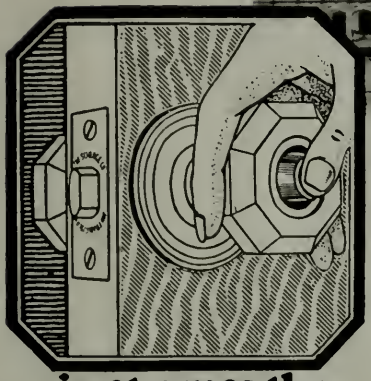

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Unit Building Costs

AT the meeting of Southern California Chapter, Associated General Contractors, March 7, a supplementary report was presented by the special committee on unit building costs of which J. C. Bannister is chairman. The report follows:

"The Chapter has had numerous requests from investors, bankers and others for copies of the chart of unit building costs, prepared by a special committee for the county assessor's office each year. To meet this demand the committee has been requested to issue such further information as is needed to enable the laymen to use the figures.

"First, it must be understood that only roughly approximate results can be obtained by such methods and that results obtained in this way cannot be compared with cost estimates based upon a detailed study of plans and specifications, as regularly made by a general contractor.

"In using these figures it should be remembered that the application of an average estimate of cost to any given locality is always open to question, even where the prices are uniform, which they never are. There are differences in grades, finish, equipment, etc., which the owner may select, while there is considerable variation in contractors' bids on the same plans and specifications. Therefore, published estimates of average cost might lead many to form wrong conclusions. For these reasons we have provided a range of costs in each item which should cover all ordinary conditions.

TOTAL UNIT COSTS PER CUBIC FOOT

Class A Steel Frame Buildings—

Office Buildings	$.55 — .75
Hotels	.60 — .75
Lofts	.25 — .35
Warehouses	.20 — .30

Class A Reinforced Concrete Buildings—

Office Buildings	$.50 — .70
Hotels	.55 — .70
Apartments	.50 — .70
Lofts	.20 — .30
Warehouses	.15 — .25

Class C Brick Buildings—

Stores on ground, apts. above,	$ .25 — .35		
Apartments	.35 — .50		
Lofts	.20 — .30	Warehouses	.15 — .25
One-story garages, per sq. ft.	1.50 — 2.00		
One-story stores, per sq. ft.	2.25 — 3.25		

TOTAL UNIT COSTS PER SQUARE FOOT

Frame Buildings—

California houses:		Good	$2.75 — 3.25
Medium	2.25 — 2.75	Cheap	1.50 — 2.00
Bungalows, special:	$5.00 to 6.00		
Good	3.40 to 3.75		
Medium	2.75 to 3.25		
Cheap	2.25 to 2.75		
Residences, two-story:		Good	$6.00 — 8.00
Medium	4.00 — 5.00	Cheap	2.50 — 3.50
Outbuildings, frame:		Good	$2.00 — 2.50
Medium	1.50 — 2.00	Cheap	1.00
Corrugated iron buildings, all kinds,	$.90 — 1.20		

Bungalow Court—Frame Apartments—

Special	$7.00 — 8.00	Good	6.00
Medium	5.00	Cheap	4.25

Four-Flat Building, two-story—

Special	$5.00	Good	4.25
Medium	3.75	Cheap	3.50

Note—Area (sq. ft.) total floor space including porches but not light courts.

Volume (cu. ft.) is average floor area times the total height from lowest basement floor to high point of roof.

Bowser's Splendid Financial Condition

Otis & Company, well known Cleveland bond dealers, recently announced the successful floatation of mortgage bonds amounting to $2,200,000 for the account of S. F. Bowser & Company, Inc., of Fort Wayne, Indiana, manufacturers of storage systems for oils and gasoline tanks, pumps, lubricators and filters. The Bankers Advisory Committee, which has had charge of the company's financial policy for the past six months, was discharged November 22nd. A glance at its consolidated balance sheet under date of September 30, 1924, shows the splendid financial condition enjoyed by the Bowser Company, reports, rumors and propaganda to the contrary, notwithstanding:

ASSETS

CURRENT		
Cash	$ 309,146.37	
Customers Accounts Receivable, Less Allowance for Doubtful, Salesmen's Commissions, etc.	2,425,603.27	
Inventories — Raw Materials, in Process and Finished Merchandise, Supplies, etc., at book values	2,295,266.10	$5,030,015.74
OTHER ASSETS		
Employees and Miscellaneous Accounts Receivable, Advances, etc.		78,440.61
PERMANENT		
Land, Buildings, Machinery, Equipment at sound value Sept. 30, 1924, as shown by appraisal report of Coats & Burchard Company		3,355,988.58
PATENTS		
(Nominal Value)		1.00
DEFERRED		
Prepaid Expenses		81,815.23
		$8,546,261.16

LIABILITIES

CURRENT		
Notes Payable	$ 132,000.00	
Accounts Payable and Accrued Items	316,427.14	$ 448,427.14
OTHER LIABILITIES		
Notes Payable (Individuals) Due Jan. 16, 1926 and 1927		134,000.00
FUNDED DEBT		
First Mortgage 7% Sinking Fund Gold Bonds (This Issue)		2,200,000.00
RESERVES		
For Contingencies		225,000.00
CAPITAL STOCK		
Pref. 7% Cumulative		
S. F. Bowser & Company, Inc.	2,948,600.00	
S. F. Bowser & Company, Ltd.	250,000.00	
Common		
S. F. Bowser & Company, Inc.	2,025,100.00	5,223,700.00
SURPLUS		
Balance Sept. 30, 1924		315,134.02
		$8,546,261.16

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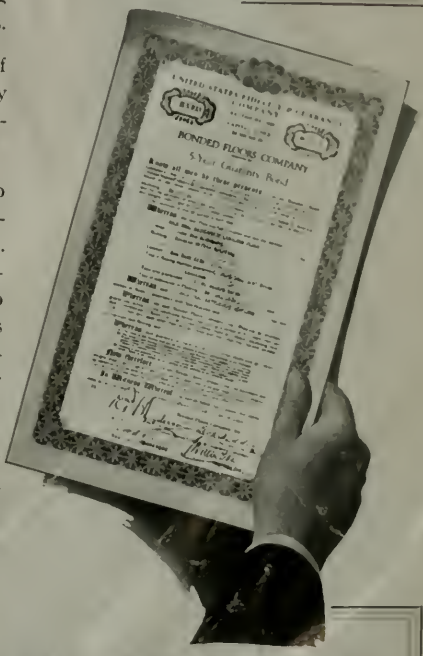

We shall be pleased to discuss the advantages of BONDED FLOORS with you and to explain how you can obtain them under competitive bids. A letter to any of our offices will bring descriptive literature, samples, or specifications.

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New Type of Southern Red Gum Door for Apartments and Residences

THE first announcement of the new Southern red gum door, manufactured by the Davis Hardwood Company, was made in the October issue of The Architect and Engineer and already the door has met with the approval of a great many architects and builders. The Davis Hardwood Company has exercised extreme care in manufacturing this door which is intended primarily for residences and apartment houses.

Southern Red Gum Door Manufactured by Davis Hardwood Company

The door is made of beautiful figured Southern red gum and is carried in stock in standard widths, 6'8" high. Buffets and mouldings can be furnished in the same wood at moderate prices. Doors and mouldings made of various Philippine hardwoods are also carried in stock.

The Davis Hardwood Company are wholesale manufacturers and dealers in hardwood lumber, doors, mouldings and trim and its completely equipped yard and mill enable the company to supply architects, contractors, owners or mill men with complete interior trim, doors, cabinets, etc., at wholesale prices. In many cases hardwood can be supplied at prices more reasonable than for soft wood.

Book On Pine Homes

The California White and Sugar Pine Manufacturers' Association is distributing to architects and contractors an attractive and substantial lumber data filing folder (which fits the standard letter files), together with a series of information sheets on California White Pine and California Sugar Pine. Additional information sheets are being compiled and will be mailed from time to time, each of them of standard size to fit the filing folder.

Architects and contractors may also have copies of a new book, entitled Pine Homes, in which the qualities and uses for California white and sugar pine are shown for every part of the house, from foundation to roof. This book is handsomely illustrated with sketches and halftones, and contains specific information as to grades of lumber recommended by this Association for various types of construction.

San Francisco Building For November

San Francisco's building record for November with a total of 707 permits, ran up to $6,358,729. For November, 1923, the number of permits was 786 and the estimated valuation was $3,850,265, showing an increase for November, 1924 of almost 100 per cent. Following is the report of the city building department for November, classified according to materials of construction:

Class	No. Permits	Est. Cost
"A"	1	$ 125,000
"B"	1	46,000
"C"	31	623,020
Alterations	318	3,215,441
Frames	355	1,983,433
Public	1	365,835
Total	707	$6,358,729

Oakland's building total for November was $1,104,741 as compared with $2,336,-47[illegible] for the same month last year.

Stores and Apartments

Architects Ashley & Evers, 58 Sutter street, San Francisco, have completed plans for a two-story store and apartment house to be built on Geary street, near Boyce, San Francisco, for Mr. W. D. Hayward.